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ABSTRACT

This study focused upon (1) whether the errors of sixth-grade children in spelling American English words were related to the dialect spoken by the children, and (2) what effect the teaching of phoneme-grapheme correspondence rules based upon a single dialect pattern would have on the spelling of second-grade children. First, eight sixth-grade classes in four major geographic dialect areas completed a 150-word spelling test in which each word presented a particular phoneme whose spelling was predictable on a "regular" basis for the "standard" dictionary pronunciation. The number of times the particular phoneme was misspelled was compared to the number of times the word was misspelled at any point. Eight phonemes (out of 19) showed significant differences between at least two of the geographic groups, indicating that the child's dialect affected his perception of phoneme-grapheme correspondences. In the second investigation, eight second-grade classes in the same schools were given six week-long lessons on specific phoneme-grapheme correspondence rules based on dictionary pronunciation. Although indefinite, the results indicated that teaching standard patterns had little effect upon the child's personal dialect. (Author/LH)

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AN INVESTIGATION OF THE EFFECT OF DIALECT VARIATION UPON THE LEARNING OF PHONEME-GRAPHEME RELATIONSHIPS IN AMERICAN ENGLISH SPELLING

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SUMMARY

This study investigates the effect of dialect variation upon children's utilization of sound-symbol relationship rules in the spelling of American English words. It asks two questions:

1. In accomplished spellers (sixth grade children) are spelling errors related to the dialect spoken by the children?

2. If beginning spellers (second grade children) are taught specific phoneme-grapheme correspondence rules based upon a single dialect pattern (in this case, the dialect represented by the pronunciation key of Merriam Webster's New International Dictionary, 2nd Edition) would the effect of dialect be diminished or erased?

The first question was investigated by administering a 150-word spelling test to sample sixth grade classes in four major geographic dialect areas. Each word in the test was selected to present a particular phoneme whose spelling was predictable on a "regular" basis for the "standard" pronunciation of the dictionary. The number of times the particular phoneme was misspelled was compared to the number of times the word was misspelled at any point, giving a proportion phoneme-error over word-error for each sample from each major dialect area. It was these proportions that were compared statistically to determine whether there was a difference between groups.

The second question was investigated by giving to sample second grade classes from the same school districts a series of six week-long lessons on specific phoneme-grapheme correspondence rules utilizing words grouped according to spelling patterns, again based on pronunciation of Merriam Webster's 2nd Edition. A similar statistical analysis of error was made.

In the sixth grade study of 19 phonemes tested, six were found to show significant differences in performance between at least two of the four groups at the .01 level and two phonemes showed significant differences at the .05 level. The significantly different phonemes were, as was expected, all vowel phonemes.

The results of the second grade study were more confusing and this question certainly needs further investigation. But on the basis of the evidence here gathered, it seems that little comfort can be given to those who would hope to do away with the effect of dialect by teaching a standard group of patterns based upon one dialect to children from various dialect areas. In fact, in some cases this teaching seemed to actually produce detrimental effects, although one would not wish to assert this as absolute fact on the basis of such minimal evidence.

The general conclusions of the study are that there does appear to be evidence that the dialect of a child affects his perception of phoneme-grapheme correspondences and may produce error of one kind in one area, and error of another kind in another area. The evidence seems to support the claim of some that children do in fact utilize phoneme-grapheme correspondence rules in spelling to a significant degree, but it cautions teachers to be aware of possible variation of spelling patterns as they relate to sound patterns--variations from any "standard" nationally produced textbook--within their local dialect area.

CHAPTER I

INTRODUCTION

This study investigates the effect of dialect variation upon children's utilization of sound-symbol relationships in the spelling of American English words.

Linguistic science has contributed much to our understanding of the structure of the writing system that represents our language. Most linguists have emphasized the fact that the American English writing system is based upon the principle of the phonemic alphabet. While there is not a perfect one-to-one correspondence between phoneme and grapheme in our orthography, nevertheless, to the extent that the alphabetic principle operates, learning to encode the language (writing, spelling) and to decode the writing system (reading) may well be enhanced by teaching spelling in a manner which will facilitate the learner's internalization of phoneme-grapheme correspondence rules. The influence of this idea can be seen in a number of the new spelling textbooks and some language arts textbooks for elementary school children.

This trend in spelling curricula, that is, to utilize the phonologically based approach, has been supported by the recent USOE-sponsored study, "Phoneme-Grapheme Correspondences as Cues to Spelling Improvement."* which was conducted at Stanford University under the direction of Paul R. Hanna.[1] This study analyzed the phoneme-grapheme correspondence in some 17,000 words and produced an algorithm for a computer which enabled the computer to spell approximately half of the words in the corpus correctly on the basis of phonological cues alone. This research and the conclusions drawn from this research have been criticized by several consultants to the Stanford study, and by Albert Yee,[2] A. Hood Roberts,[3] and David Reed[4] on several points, but specifically on the basis that the generalizations about phoneme-grapheme correspondence rules which were made from the data produced by the study would not be valid for speakers of dialects markedly different from the dialect used for the study; namely, the dialect represented by the pronunciation key of the Second Edition of Merriam Webster's New International Dictionary."**

There have also been a number of suggestions recently that dialect variation may contribut to the difficulties some children find in learning to read and write. Kenneth Goodman, writing in Elementary

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*Hereinafter referred to as "the Stanford study."

**Hereinafter referred to as MW II.

English, December, 1965, on "Dialect Barrier to Reading Comprehension" raises the question as it relates to the reading problem. Suggestions concerning the effect of dialect on learning to spell have been raised by Labov,[5] Beryl Bailey,[6] and Shuy,[7] but only in the case of Negro ghetto speech and with very small samples. Also the work of this group has been largely descriptive in nature and emphasized morphological and syntactical features more than the phonological. This study will concentrate on "Standard" middle class speech, major geographical dialect areas, and the utilization of phonological cues in spelling.

Hypothesis

The hypothesis is that spelling errors will be similarly patterned and randomly distributed throughout all dialects, and therefore that (1) the word-groupings and generalizations about phoneme-grapheme correspondences based upon the Stanford study would be applicable to the development of spelling curricula regardless of dialect without serious modification, and that (2) there will be no discernible relationship between dialect variation of particular phonemes and misspellings of those phonemes, neither in the process of learning to spell nor in the end product of an accomplished speller. The first phase of the research should provide evidence concerning the accomplished speller (sixth graders), and the second phase should provide evidence concerning the "learning" speller (second graders).

The hypothesis can be logically defended thus: Though dialects may differ significantly phonologically, each speller's visual perception of a word according to the standard spelling is related to his own phonological dialect. Children from different dialect areas are able to use dictionaries with little apparent confusion as to pronunciation. For example, if a student is given the word *Cuba* to look up in the dictionary for pronunciation, and he is an "r-adder" from Southeastern Massachusetts, his reasoning must be something like this: When the word was presented, and the reference made to a dictionary for pronunciation, the child quickly saw that the final *a* in *Cuba* was keyed to the final *a* in *sofa*; thus *s-o-f-a* must be pronounced like *C-u-b-a*, and since *s-o-f-a* is pronounced /s ow fər/ in his dialect, then *C-u-b-a* must be pronounced /k ɨu bər/. Therefore, a standard dictionary is not merely adaptable to any dialect, but is read *as* a dialect, and thus does not interfere with the learning of pronunciation and spelling.

This logic suggests that a similar association may occur in the spelling process. That is, generalizations learned by pupils from different dialect areas and patterns presented by the teacher speaking the dialect will not adversely affect the learning of phoneme-grapheme correspondences regardless of the dialect. Of course, the linguisticallybased phoneme-grapheme directed spellers are very recent and not even yet the major methodology in today's schools. This was an advantage to the research team. The "accomplished" spellers represented by sixth graders were determined to have been taught on primarily a memorative (20 word/week lesson) morphological basis. Therefore, if dialect were not a factor, errors ought to be randomly distributed in relationship to phoneme-grapheme correspondences. One, of course, wonders that if error were either random or patterned (in terms of phoneme-grapheme relationships) as is suggested above, what if the patterns are presented and perceived by the "learning" speller according to patterned phoneme-grapheme instruction. This project should shed some light on this important question which has been the subject of large debates and challenges by such noted authorities as Hanna and Horn,[8] as well as textbook publishers.

Limitations of the Study

1. This study is limited to the investigation of four selected dialect areas in the eastern and southern part of the United States: (1) Southeastern New England, (2) Central Georgia, (3) the Western Reserve area of Ohio, (4) Central Texas.

2. The subjects of the study represent a population of native speakers of the standard dialect for these four areas.

3. Classrooms were composed of sixth grade children of average achievement for their grade level, and generally of middle class socio-economic status, and second grade classrooms of identical characteristics.

4. Only 19 selected phonemes with their graphic correspondences were considered in the sixth grade study. Six were selected for the second grade phase of this study. The reason for the selection of these phonemes and only these phonemes is explained in the section Design of the Instrument.

Related Research

It is, in fact, the dearth of research into this particular problem that led to the present study. The basic idea that pronunciation (therefore dialect) will affect the spelling of words in an alphabetical language is not new. Much reconstruction of the pronunciation of ancient languages is based upon this principle. For example, George Friedrick Krapp's monumental study of the pronunciation of English in the American colonies derives its data from the written records of town clerks, who were semi-literate men. Krapp reasons that these people would rely upon their pronunciation of words for spelling when they were unsure of the standardized orthography, which was just then beginning to be publicly accepted.[9]

The only recent study, however, primarily directing itself to a systematic investigation of the problem of the effect of dialect variation upon the spelling of the English language, was completed by one of the authors as a pilot for the present study.[10]

At the 1966 convention of the NCTE in Houston, Texas, Professor Beryl Bailey of Yeshiva University presented a paper which indicated that dialect interfered with children's learning to spell.[11] However, Bailey's evidence was based upon an extremely limited sample from one freshman class in a small Mississippi college.

Other studies of children's spelling errors, such as the Iowa,[12] the Gates,[13] and Fitzgerald's,[14] have ignored the dialect problem. The samplings have been taken from U. S. public schools at random and have covered the country, thus obscuring any information as to whether, for example, Fitzgerald's "100 Most Misspelled Words"[15] are the same for pupils in Georgia and in Ohio.

While studies of different methodologies for the teaching of spelling and/or reading abound, none of these has controlled the variable of dialect differences.

Again at the 1966 convention of NCTE, E. Hugh Rudorf, one of the principal research associates on the Stanford study, and Thomas Horn of the University of Texas debated this issue of the applicability of the generalizations drawn from the Stanford data across major dialect areas, Horn challenging the utility of these generalizations, Rudorf arguing the plausibility of the position stated above, i. e., that phoneme-grapheme correspondence rules would be learned whether taught or ultimately internalized in the accomplished speller in relationship to a particular dialect and, therefore, dialect would not be a factor in utilizing such generalizations. Both men, however, admitted the need for research to provide evidence one way or another.

Petty, in a critique of the earlier Hanna-Moore study,[16] of which the current Stanford study is basically an extension, indicated that "dialect differences and variability of word pronunciation in different sentence contexts complicate associating written symbols with given speech sounds"; and that "there is a danger in generalizing about sound-to-letter correspondences from a narrow sample of American English to a more comprehensive sample."[17]

These critics base their comments upon an intuitive feeling that dialect should affect the internalization of phoneme-grapheme correspondences. The opposite explanation of the adjustment made by speakers of different dialects given in the earlier discussion of the hypothesis is also only a rationalization. The authors have searched diligently for concrete research evidence to support one position or the other. None of the consultants for the Stanford study was able to quote research evidence to support his criticism. In the process of conducting the present study, various scholars have been consulted: Raven McDavid, Richard Venezky, Beryl Bailey, William Long, Richard Hodges, Paul Hanna, Thomas Horn, Walter Petty and Roger Shuy; none of these has been able to refer to any published or unpublished study that directly attempted to answer the problem to which this study is directed.

CHAPTER II

METHODS

Selection of Population

Four dialect areas were selected on the basis of Kurath and McDavid's The Pronunciation of English in the Atlantic States,[18] and suggestions offered by Professor Richard Venezky of the University of Wisconsin and Professor Beryl Bailey of Hunter College, New York City. Selections were made to offer phonological contrasts and as wide geographical distribution as practical.

The populations to be tested were selected from the following four dialect areas: (1) Southeastern New England (Dracut, Massachusetts), (2) Central Georgia (LaGrange, Georgia), (3) the Western Reserve areas of Ohio (Wellington, Ohio), and (4) Central Texas (Waco, Texas). Wellington was selected as an example approximating the "standard" pronunciation represented by MW II, which was the basis for the Stanford study and therefore serves as the pattern for the selection of the words to be utilized for the testing.

A chief school officer was contacted in each of the selected areas and was asked to recommend a school district or a particular school within his jurisdiction which he felt would contain a stable population representing standard speech of that dialect area.

From these schools, two sixth and two second grade classrooms were chosen and it was determined that all of the pupils utilized in the study were at least first generation natives of the dialect area. This was determined either by school records, teacher knowledge, or questioning of the pupils. All children of doubtful nativity to the area were immediately discarded.

Sixth grade classrooms were used since, in most schools, the sixth grade marks the termination of formal spelling instruction as a separate subject, and spelling patterns may be said to have been fairly well established by this grade. These have been previously, and will be from now on, considered as the "accomplished" spellers.

Second grade classrooms were chosen to test the hypothesis of early instruction based upon phoneme-grapheme correspondences, since formal spelling instruction normally begins at the second grade.

It was further verified by the administrators of the districts that the spelling texts used prior to and through the sixth grade were of the traditional type--that is, not phonologically based, but based upon other criteria such as word frequency and children's usage.

Classes were matched on socio-economic level (middle class) and general ability on the basis of teacher judgment and grouping procedures followed by the particular school district. Classes were heterogeneous and of "average" ability as determined by the teacher and school superintendent.

More rigid control of IQ was not practical, since scores were not available to the researchers for all children, especially in the second grade. General "spelling ability" was controlled after the fact by comparison of total test scores and elimination of pupils scoring excessively high or low on the instrument used in this study.

Specifically, bottom and top quartiles were eliminated in the sixth grade. It is obvious that in a study of "learning to run" one would not include wheel-chair cases nor olympic champions. Accomplished spellers present no significant amount of error. Extremely poor spellers show responses which appear to be random and totally unrelated to an understanding of the alphabetical principle.

It became clear in looking at the constants, which in this case were designed to be the consonants, that with extremely poor spellers (the bottom quartile) the spellings were inconsistent and unrelated to obvious phoneme-grapheme correspondences.

In the second grade ("learning spellers") this same assumption could not be made. By the sixth grade one could easily see from the raw data that certain phoneme-grapheme correspondence rules had been established. But in the second grade these were precisely the same rules that we were attempting to teach. Therefore, all data had to be considered to determine whether the instruction was effective--dialect free--as had been assumed by our hypothesis and challenged by Horn and others mentioned previously.

The homogeneity of the dialect of the pupils in these classrooms was tested by having the sixth grade children read into a tape recorder a selection from an SRA story at the sixth grade level. (See Appendix A) The second grade children pronounced the names of twenty common pictures. (See Appendix B)

The tapes of these recordings were analyzed by the investigators in consultation with Professor Curt Rulon of North Texas State University to determine the homogeneity of the dialect of members of the class. Had any of these pupils, other than those eliminated on the bases of previously mentioned information, deviated significantly from the standard dialect of the area, they would have been eliminated from the tabulations. However, in no case was this necessary. A description of the various phonological features of their dialect area was provided by the Atlas and by the linguist-consultants to the project, Bailey, Long, and Rulon.

The regular classroom teacher of these children was determined to be a native of the area, and again this fact was validated by having the teacher involved tape the reading of all the tests to the children in both the sixth and second grades.

Design of the Instrument

Not all phoneme-grapheme correspondences of American English were tested. Kurath and McDavid note that "all dialects of English spoken in the Eastern States have the same systems of consonants except that the dialects lacking postvocalic /r/ have an additional consonant /ɔ /, as in *hear*, *care*, *four* and *pore*."[19] Therefore, the only consonant spelling where one might hypothesize spelling errors that would differentiate dialect would be those of postvocalic /r/. However, in addition to spellings of /r/, the spelling of /t/, /š/, and /f/ were tabulated as controls. These were added to support the control obtained in Graham's study by /s/, /š/, /k/, and syllabic /n/. The spelling of these latter consonants are sufficiently difficult so that a number of misspellings should occur in the samples. However, since there is no dialect variation noted in these consonants, the spelling errors should be random across the dialects.

Venezky also suggested that the contrast /hw/ versus /w/ in words such as *where* and *wear* should be investigated.

In the case of the vowel phonemes, Kurath and McDavid have also stated that "inspection of these (i.e., Eastern States) dialectical vowel systems shows that the differences are largely confined to the low and raised-low vowels."[20] Therefore, particular attention has been given to the low vowel spellings. These are represented by, according to Kurath and McDavid, six historical types which are illustrated by the following groups of words:

1) hat, bag, ashes
2) glass, calves, can't
3) car, father, calm
4) crop, lot, rod
5) frost, lawn, fog
6) law, daughter, salt[21]

These vowel sounds do not all represent phonemic differences in any one of the examined dialects, but they do represent anywhere from two to four contrasts in the pronunciation key of MW II according to which the word list for testing was constructed.

In addition to these low vowels, the simple vowels /i/, /ae/, /e/, and /u/ were included, as well as the complex vowels /ey/, /ow/, /iy/, /iu/, /au/, and /oi/, since an examination of the dialect descriptions in Kurath and McDavid indicates that in certain dialects there might arise confusion in the spelling of some of those vowel phonemes. This gives a total of 19 phonemes (5 consonants and 14 vowels) to be considered in the testing.

The second grade words were selected from monosyllabic patterns based upon the printouts from the Stanford study (which were as previously stated based upon MW II), and were constructed on the basis of the standard five-day lesson plan with typical exercises and tests, but focusing upon regular phoneme-grapheme correspondences in the word lists and corresponding activities. The final tests were constructed to present words based upon these patterns that were not presented in the lesson and also words representing possible confusing elements: e.g., the word *mint* in the post-test for the phoneme-grapheme correspondence /e/ may be written *e*. (Lessons and tests appear in Appendix C.) To ensure equal and sufficient occurrence of each phoneme, word lists were constructed to be presented as tests to the classes selected. Since spelling errors must be made in order to obtain any observed differences, words selected for the sixth grade test were mostly of sixth to eighth grade levels of difficulty according to Dale's *Children's Knowledge of Words*.[22] But considering the heterogeneity of the pupils in these classes, approximately 20 percent of the words were chosen from the fourth grade level to avoid frustration at the task on the part of the poorer spellers.

The second grade lessons contained a pre-test and final test with a post-test given on Monday, Friday and the following Monday, repetitiously for each lesson based upon a particular phoneme-grapheme correspondence, except for the first lesson which lacked a pre-test and the final lesson which lacked a post-test.

All the words used in the test were chosen from the printouts of words spelled correctly on phonological cues alone by the algorithm for the Stanford study.

A Note on the Classification of Vowels According to MW II

In the case of the low and low-back vowels /ɔ/ and /a/, MW II utilizes at least four different diacritical marks for the vowels in words which normally contain these vowel types. The diacritic system of

MWII is obviously influenced by the orthography. For example, the first vowel in father is represented by /a/, while the vowel in odd is represented by /ŏ/. These two symbols imply two different sounds when in fact they are certainly no more than allophonic variations in most dialects. Because of this system, there appear to be four different vowels of this type according to MW II classification: /ȧ/ as in arm, /ä/ as in father, /ô/ as in orb, and /ŏ/ as in soft.

It was on this basis that the rules for the algorithm in the Stanford study were constructed. Therefore, there appear in the test four groups of words corresponding to this system of representation. Realizing, however, that these could not be systematically represented by a standard phonemic alphabet, the symbols /a^1/ for the vowel in swamp, /a^2/ for the vowel in calm, /ɔ^1/ for the vowel in pawn, and /ɔ^2/ for the vowel in scoff, were utilized to represent these four admittedly artificial distinctions.

Test Construction

In the sixth grade in order to achieve a near-normal classroom situation for the administration of the test it was decided to present the words to the children in the traditional form of a spelling test, i.e., pronounce the word, give the word in a sentence, and repronounce the word. Since the purpose of the test is to measure utilization of phonological cues in spelling, the sentences were designed to offer no reinforcement of morphological cues. In other words, the sentences constructed were nondefinitional.* (See Appendix D)

Administration of the Instrument

The instructions to the teachers for the administration of the test are reproduced in Appendix E.

Tabulation of Data

Tests were recorrected by the researchers according to a set of consistent criteria for determining misspellings, e.g.:

1) Words omitted were counted as both word-error and phoneme-error.

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*Morphological cues would certainly be utilized by some of the pupils in spelling some of the words, but there is no reason to suspect that these would be other than randomly distributed across dialects.

2) Whether an item was a spelling error or a handwriting problem (e.g., undotted i's and uncrossed t's, and letter reversals--b for d, etc.) was resolved considering the context and the consistency of the pupil's handwriting patterns.

3) Added e's at the end of a word were considered part of the vowel spelling and therefore an error in the vowel phoneme spelling. (VCE rule)

For each child, and each test, scores were tabulated as to misspelled words and the misspellings of the test phomemes. Thus for each occurrence of a phoneme in a list word there was a possibility of the word being misspelled at some other phoneme and/or the particular test phoneme in that word being misspelled, or both.

The misspellings of the words selected for each test were tabulated in two different ways: (1) whether the word was or was not misspelled, and (2) whether the test phoneme was misspelled. Obviously if the test phoneme was misspelled, the word was also misspelled, but the word could have been misspelled by mis-representations of the other phonemes in the word while the test phoneme itself was correctly spelled. For example, the first word on the first test was stature. The phoneme being tested was /ae/. If the word were spelled stecher, this would be considered both a word error and a phoneme error. It is obviously impossible to have a phoneme-error without also having a word-error.

Thus a comparison was made between the total misspelling of that particular phoneme and the total misspellings of the words. This produced a proportion, phoneme-error over word-error which was subjected to statistical analysis for significance of difference between proportions.

Statistical analysis of the data was done as follows:

For the Sixth Grade

A one-way analysis of variance design with unequal group sizes was used to analyze the data. The actual computations were done by a statistical program (ANOVA-1) which is available on tape at the University of Nebraska Computing Center.

The four regional samples were compared for differences in error rates on each of 17 phonemes. Significant differences between the groups were indicated by an overall index (F). When significant F's were encountered, post hoc orthogonal comparisons were made between specific groups means to determine wherein the significant differences lie.

Statistical significance was set at the .05 level of probability. In other words, when group differences were large enough that the probability of the regions, represented by the samples in the study, being truly different on the measured task was 95 percent or greater, the assumption of no differences between regions was rejected.

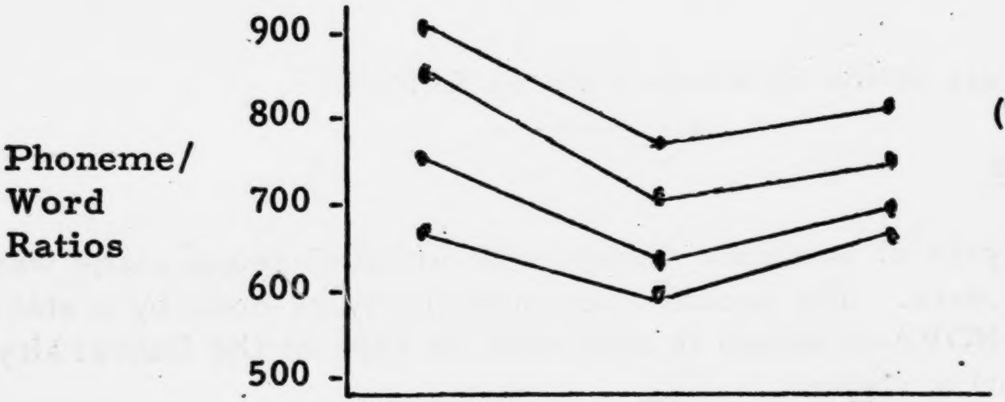
The reader is referred to Dixon, W. and Massey, F., "Introduction to Statistical Analysis," published by McGraw-Hill, for a more complete discussion of the analysis of variance design, and to Edwards, A., "Experimental Designs in Psychological Research," published by Holt, for a discussion of multiple orthogonal comparisons of means.

For the Second Grade

On the following pages, the results of the analysis of varianc with repeated measures for unequal n's[1] are summarized and described. This statistical procedure is repeated for each phoneme.

1. Means and n's. The means for each of the four groups and their respective n's are given. Means for each of the two or three trials are presented.

2. Graph. The graph is simply a graphical display of the two or three means for each group. Since the treatment was presented after the pretest, and was intended to correct spelling errors, the graph should show a drop in error rates from pre- to post-test, and then perhaps a slight increase on the follow-up test. Thus, the graph should ideally look like the following example:



(These rates and group orders are, of course, hypothetical.)

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[1] The two-way ANOV with repeated measurements for unequal n's is more fully explained in Winer, B. J., Statistical Principles in Experimental Design, N. Y., McGraw Hill Book Company, 1962, pp. 374-378.

3. Simple Main Effects. (df numerator, denominator) In a two-way ANOV we get information on:

a) the differences between groups averaged across all trials.

b) the differences between the trials averaged across all groups. Thus the average of the four group means of Trial 1 is compared with similar averages on the remaining trials.

c) Simple main effects for trials. This is the same as a regular one-way ANOV in which the four group means are compared for Trial 1 and the same procedure is followed for each trial. Thus, by looking at the graph, we are looking at the means of each group in Trial 1 which have been analyzed. The F test tells us if the observed differences between groups is truly significant.

d) Simple main effects for groups. Similarly, a one-way analysis of variance is run on the three trial scores for each group separately, and if these means are significantly different, the difference is reflected in the F. The means on each trial for any group are shown on the graph.

Finally, a two-way ANOV indicates interaction effects if they exist. Simply, this means that in any specific category, e. g., Group 1, Trial 2 or Group 3, Trial 1, etc., that particular interaction resulted in discrepant-seeming scores. Graphically, an interaction exists any time the lines connecting the means for the groups are not at least roughly parellel. This is the case in this study. It is obviously a disturbing finding, because it means that the teaching treatment in the four regions (assuming it was the same kind) did not yield similar effects. In some cases, post-test scores dropped, in other cases they rose. It is possible that this paradoxical situation is the result of the phoneme to word ratios used. For example, if children in some group misspelled an average of four words on a specific phoneme in the pre-test, and two of the words had phoneme errors, the average ratio would be .500. If, after teaching, the rate of spelling errors dropped to one word average and phoneme errors to one phoneme, then the resultant ratio is .999.

The final table for each phoneme summarizes the two-way ANOV. There are only three meaningful analyses available:

1. The general between-treatments (see a. under simple main effects).
2. The between-trials analysis (see b. under simple main effects).
3. The interaction effects.

CHAPTER III

RESULTS

An Introductory Note

Research is judged to be important on several criteria. It should be relevant, timely, useful, i. e., applicable, designed properly, have statistical significance, and state clearly its limitations.

The researchers recognized these facts of research life and so proceeded to attempt to meet these criteria as the research was conceived, throughout the analysis and investigation, and in the final report. Obviously any particular reader could find some fault with numerous aspects of this study relating to these criteria. It is felt though, that most faults have been recognized by the researchers and will be stated clearly in the limitations, and that they do not significantly interfere with the general conclusions of the study.

Also, as happens to most researchers, when the data returns from the computer phases of analysis, all kinds of questions arise. Some of these questions should probably have been thought of even as far back as the design stage of the project. These, though, we feel in most cases were beyond the submitted design of the study--and beyond the financing of the project.

Analysis of the results statistically were at times of little help, even misleading; and the interpretation of these significances were not always obvious in answering our specific questions relating to dialect and spelling. Possibly the programs chosen for analysis of the data obscured certain kinds of information and did not provide for answers to certain kinds of questions. But some discoveries seem clear and some obvious conclusions can be drawn.

The Sixth Grade Data

This phase of the research is, as earlier stated, designed to determine whether or not, and to what extent, dialect may be interfering with the perception of phoneme-grapheme correspondence rules in the dialect areas selected for this study. That is, will the statistical ratio (PE/WE) indicate that a particular phoneme is more difficult to discriminate, and therefore spell, in one dialect area than another.

Table I lists 17 of the 19 phonemes, the F ratios obtained, and the degree of significance: non-significance, significance at the .01 level, or significance at the .05 level. The phonemes /hw/ and /w/ will be

TABLE I
Test Phonemes and Ratios
PE/WE

Areas:
001 LaGrange, Georgia
002 Wellington, Ohio
003 Dracut, Massachusetts
004 Waco, Texas

For significant differences
at .01 level: F 3.95
at .05 level: F 2.68

Phonemes	F Ratio	Significance
1. /ae/	3.3467	.05
2. /e/	2.9569	.05
3. /i/	9.6799	.01
4. /u/	1.7356	NS
5. /a^1/	1.4771	NS
6. /a^2/	1.1976	NS
7. /ɔ^1/	9.7360	.01
8. /ɔ^2/	10.6653	.01
9. /ey/	1.2046	NS
10. /iy/	2.4597	NS
11. /ow/	4.3968	.01
12. /iu/	2.6708	NS
13. /aw/	5.0265	.01
14. /oi/	4.7475	.01
15. /r/	1.7731	NS
16. /t/	1.6695	NS
17. /f/	1.2983	NS

TABLE II

Data on Significant Phonemes

Areas:
001 LaGrange, Georgia
002 Wellington, Ohio
003 Dracut, Massachusetts
004 Waco, Texas

1.	/ae/	Treatment Area	1	2	3	4
		Sample Size	31	38	32	49
		Mean	.047	.098	.112	.035
		Standard Deviation	.094	.144	.172	.091

F Ratio 3.3467
Significance .05

GR. 2 and GR. 3 are significantly greater than GR. 1 and GR. 4.
GR. 3 is not significantly greater than GR. 2.
GR. 1 is not significantly greater than GR. 4.

2.	/e/	Treatment Area	1	2	3	4
		Sample Size	31	38	32	49
		Mean	.485	.421	.328	.339
		Standard Deviation	.221	.272	.275	.244

F Ratio 2.9569
Significance .05

GR. 1 and GR. 2 are significantly greater than Gr. 3 and Gr. 4.
GR. 1 is not significantly greater than GR. 2.
GR. 4 is not significantly greater than GR. 3.

3.	/i/	Treatment Area	1	2	3	4
		Sample Size	31	38	32	49
		Mean	.515	.272	.231	.405
		Standard Deviation	.259	.221	.211	.259

F Ratio 9.6799
Significance .01

GR. 1 and GR. 4 are significantly greater than GR. 2 and Gr. 3.
GR. 1 is significantly greater than GR. 4.
GR. 2 is significantly greater than GR. 3.

TABLE II
Data on Significant Phonemes
Cont'd.

Areas:
001 LaGrange, Georgia
002 Wellington, Ohio
003 Dracut, Massachusetts
004 Waco, Texas

4. /ɔ^1/	Treatment Area	1	2	3	4
	Sample Size	31	38	32	49
	Mean	.482	.524	.646	.462
	Standard Deviation	.151	.149	.153	.168

F Ratio 9.7360
Significance .01

GR. 2 and GR. 3 are significantly greater than GR. 1 and GR. 4.
GR. 3 is significantly greater than GR. 2.
GR. 1 is not significantly greater than GR. 4.

5. /ɔ^2/	Treatment Area	1	2	3	4
	Sample Size	31	38	32	49
	Mean	.367	.481	.180	.210
	Standard Deviation	.251	.334	.187	.255

F Ratio 10.6653
Significance .01

GR. 1 and GR. 2 are significantly greater than GR. 3 and GR. 4.
GR. 2 is not significantly greater than GR. 1.
GR. 4 is not significantly greater than GR. 3.

6. /ow/	Treatment Area	1	2	3	4
	Sample Size	31	38	32	49
	Mean	.495	.464	.506	.291
	Standard Deviation	.249	.324	.314	.338

F Ratio 4.3968
Significance .01

GR. 1 and GR. 2 and GR. 3 are significantly greater than GR. 4.
GR. 3 is not significantly greater than GR. 2 or GR. 1
GR. 1 is not significantly greater than GR. 2.

7. /aw/

Treatment Area	1	2	3	4
Sample Size	31	38	32	49
Mean	.706	.452	.388	.544
Standard Deviation	.341	.385	.311	.348

F Ratio	5.0265
Significance	.01

GR. 1 is significantly greater than GR. 2 and GR. 3 and GR. 4.
GR. 2 is not significantly greater than GR. 3.
GR. 4 is not significantly greater than GR. 2.
GR. 4 is significantly greater than GR. 3.

8. /ɔi/

Treatment Area	1	2	3	4
Sample Size	31	38	32	49
Mean	.668	.512	.440	.513
Standard Deviation	.185	.253	.265	.265

F Ratio	4.3968
Significance	.01

GR. 1 and GR. 2 and GR. 3 are significantly greater than GR. 4.
GR. 3 is not significantly greater than GR. 2 or GR. 1.
GR. 1 is not significantly greater than GR. 2.

treated later. As can be seen, the phonemes /ae/, /e/, /i/, /ɔ^{1}/, /ɔ^{2}/, /ow/, /aw/, and/oi/ were found to show significant differences in the PE/WE ratio between at least two of the four dialect areas.

Table II includes only the data on these phonemes found to be significant at either the .01 or .05 level and the areas between which there is significance. The statistical data on those found insignificant can be found in Appendix G. Obviously the focus here is on the significantly different phonemes for it is here that the hypothesis is tested.

The phoneme /ae/ was significant between Groups 1 and 4 versus 2 and 3, which indicates a definite distinction between the North and South. (LaGrange and Waco versus Wellington and Dracut) The phoneme /e/ was significant between Groups 1 and 2 versus 3 and 4. This suggests that the sound /e/ caused a greater spelling problem to Wellington and LaGrange than to Dracut and Waco. This seems strange when one looks at the next phoneme, /i/.

The phoneme /i/ was significant as expected between Groups 1 and 4 versus 2 and 3, again an obvious North-South difference. But even between 1 and 4 there was a significant difference. LaGrange seems to have even greater difficulty in distinguishing the phoneme /i/ than does Waco. Possibly the phonemes /e/ and /i/ in Waco provide a greater phonemic distinction than in LaGrange. Also Area 2 is significantly greater than 3. This suggests also that Wellington is less able to distinguish /e/ and /i/ than Dracut. This seems peculiar, yet the data and results are clear. Possibly the use of Wellington as a control (in terms of its relation to MW II) is less valid than has been suggested. This phoneme /i/ (and particularly compared with /e/) presenting the difficulty it apparently does leaves one very dubious (concerned at least) over instruction based on "standard" pronunciation in even so-called "standard" areas.

The phoneme /ɔ^{1}/ was significant between Areas 1 and 4 versus 2 and 3 (North-South distinction). Also Area 2 was significantly greater than 3. Apparently a major problem with /ɔ^{1}/ is involved in Dracut. The distinction here includes the next mentioned phoneme, /a^{2}/, and there is apparently in Dracut a good deal of confusion between these two sounds.

The phoneme /ɔ^{2}/ was significant between Areas 1 and 2 versus 3 and 4. Note that according to MW II /ɔ^{1}/ is in relationship to an accompanying or the opportunity of an accompanying /r/. Dracut apparently has added the /r/ sound with /ɔ/ in a number of cases such as the test word /ɔrtapsiy/ for autopsy as expected, and did not add an r here, since in Dracut /ɔ^{2}/ is to them a distinctive sound clearly different from /ɔ^{1}/. Waco seemingly has this same distinction.

The phoneme /ow/ was significant between Areas 1, 2, and 3 versus 4. Here Waco was the better speller of this phoneme. This result is not readily explainable in terms of dialect. It seems the most obvious explanation in this case was that kids in Waco knew the rules concerning the spellingsof /ow/. Again the options for the spellings of /ow/ are limited in terms of the graphs which can be used. (This discussion is furthered, again, in the section on misspellings.)

The phoneme /aw/ was significant between Group 1 versus 2, 3, and 4. It can be seen there was greater difficulty in spelling this phoneme in LaGrange than in the other three areas. Also Area 4 is significantly greater than Area 3, suggesting that Waco and LaGrange are somewhat in the same category. Dracut seems most able to relate this particular phoneme to the standard orthography.

The phoneme /oi/ was significant between Area 1 versus 2, 3, and 4. Clearly LaGrange suffers a great deal of confusion here, since this was obviously one of the worst performances on any phoneme and quite significant from the closest mean score. Interestingly enough, the second closest scores (almost identical) were found in Wellington and Waco. This is surprising, since one would expect a distinct difference between these two areas with respect to this phoneme. Again, Wellington did not perform as expected in terms of a control for "standard" midwestern speech based upon MW II.

Waco and LaGrange again, as was observed in the discussion of /e/ and /i/, though both are high in the number of errors, still show a significant difference, suggesting that this phoneme /oi/ also may not be the same for these two areas.

Sixth Grade Data - Misspellings

A Note on Misspellings:

The tabulation of the most frequent misspellings of the test phonemes are included in Appendix H. It is not possible in this study to completely analyze all of these data. Certain observations, however, can be made in relationship to some of the significant phonemes but also there are interesting phonemes which do not show in terms of statistical differences in analysis.

In certain cases the choice of graph(s) to represent a particular test phoneme is indicative of a phonological difference as related to descriptive dialectical variances. This is most evident in areas representing markedly different dialects. According to the newer phonology (transformational phonology as suggested by Chomsky and Halle, Sound Patterns of English) the traditional orthography is ultimately applicable to any and all dialects. This of course would support the original hypothesis of this study. This theory was only recently made known to the investigators so neither will take credit for this hypothesis on this basis. The investigators sought only a structural linguistic analysis of the data. This of course Chomsky and Halle would call a surface structure analysis.

All that this says is that the actual choice of a graph(s) is limited by any particular phoneme-grapheme rule. How many ways are there, for example, of spelling the phoneme /e/ or /i/ or /ow/? Thus not all error is immediately observable as being dialectical in nature. But as the newer theory suggests, one might find even dialectically related spellings if one were to look closely at the direction in which the sound patterns of particular areas had moved and therefore the corresponding graphs they tend to favor. This analysis of phonological phenomenon, of course, Chomsky and Halle have related to the deep structure.

The tabulation of misspellings was suggested by Bailey and Venezky as likely to show influence of dialect. However, in most cases where significant differences were obtained between dialect areas, the misspellings in both cases do not appear different. For example, one of the highest fractions obtained was in the case of the phoneme /i/, yet misspellings of /i/ were predominantly the graph e in all four areas. Therefore, the misspelling tabulations do not really contribute anything to the understanding of the dialect problem, but is this surprising? Granted that in certain areas of the country, for example in Texas, the /e/-/i/ distinction is not clear, especially before nasals; therefore either phoneme should present problems in spelling on phonological cues. But what are the alternatives to the spelling of /i/? In the case of this phoneme before a nasal, we would only expect the graph e or i, certainly not an a, o or u. Therefore the tabulation of misspelling in all areas should reasonably only differ in the use of i or e, though it may or may not differ in sound.

In other words, a shift in pronunciation resulting in dialectical variation in phonology does not necessarily lead to corresponding change in graph, and the vowel in the underlying or deep structure remains the same. To the extent that Chomsky and Halle are right and spellers rely upon some intuition of underlying structure, the graphic representation for neighboring vowels (/e/ and /i/; /ɔ/ and /a/) are limited to only a pair of alternatives. Thus we would expect only these alternatives to present themselves in patterns of misspellings, while the statistical significances obtained still show the influence of dialectal vowel changes operating, and a particular dialect area could still show a preference for a particular graph.

Added r's

Some misspellings, though, are clearly dialectically related, as was found also in the pilot. These were /r/ added and the distinction between /hw/ and /w/.

In the case of r added (r included as a part of the vowel spelling), Table III indicates what was found. There may have been other added r's throughout the study, but they were only tabulated in those cases where there was a reasonable hypothesis that they might occur. (e.g., in the pilot study r was often added to words like plaza).

Although the vowel /a^1/ showed an insignificant difference between groups, it is still interesting to note that Dracut and LaGrange were more prone to adding an r to the vowel spelling than were Waco and Wellington.

/ɔ^1/ and /ɔ^2/, as will be remembered, were significant, but only in the case of /ɔ^1/ was the additional r in the spelling of the vowel a prime contributor to the significance.

Here, Wellington stands out unquestionably as relating to the "standard" pronunciation of MW II as the "control" with no added r's. Dracut is the worst offender, as was indicated by the pilot study of Graham. Waco shows the second largest occurrence of added r's. LaGrange, with also a significant number of added r's, reflects what was found earlier in Zebulon, Georgia, in Graham's pilot study.

/hw/ versus /w/

The immediate problem with the investigation of these phonemes was the selection of vocabulary items for testing. /hw/ simply does not occur often enough, except in a very few "function" words such as where, when, why, etc., which are likely to have been learned memoratively by the subjects.

Therefore, "nonsense" words were constructed to test the occurrence of this contrast in the various dialect areas. (The "real" words whet and whim were probably perceived as "nonsense" at the second grade level but might have been perceived as real words by the sixth graders.)

One problem in doing this, of course, is that nonsense words cannot be treated statistically in the same manner that the real words can since there is no correct spelling for the nonsense words. The following table shows the result of the tabulation of the three real words in the tests by areas. The pronunciations were made by a

TABLE III
/r/ ADDED

	Dracut	LaGrange	Waco	Wellington
ɔ^1	38	16	28	0
ɔ^2	1	1	0	0
a^1	4	3	0	1

"standard" Midwestern speaker, realizing the consonant blend in whet /hw/ and when /hw/ and of course only the back glide /w/ in welt. It can be seen with a quick glance at the table that no significant difference was found between areas for this contrast.

Area:	Waco	Dracut	LaGrange	Wellington
Number of students:	54	32	31	40
/hw/ whet	$\frac{36}{37}$ w	$\frac{31}{31}$ w	$\frac{18}{20}$ w	$\frac{30}{31}$ w
/hw/ whim	$\frac{10}{10}$ w	$\frac{24}{24}$ w	$\frac{17}{18}$ w	$\frac{18}{18}$ w
/w/ welt	$\frac{7}{8}$ wh	$\frac{1}{1}$ wh	No phoneme error	$\frac{3}{3}$ wh

The nonsense words are not tabulated for either the sixth or the second grade. The data here was simply totally confusing and showed no trends whatsoever. For the second grade children, apparently, the task of being asked to write a nonsense word was so utterly meaningless that their attempts were hardly recognizable. This was a weakness in the design which had not been anticipated.

In brief, while there is some evidence that a child who in his own dialect does not realize the initial /h/ in wh words, may tend to omit the h in spelling, this evidence is not statistically established in this study, and it apparently does not relate to major geographic areas. /hw/ versus /w/ speakers appear to be randomly distributed and it seems to be an idiolectal rather than a dialectal phenomenon. The problem here as far as the teaching of spelling seems to be mainly a pedagogical one; that is, to train teachers well enough in the facts of language so that they realize that it is not "correct" to pronounce the word which as /hw i č/ and quit wasting time and penalizing children who quite normally and naturally pronounce it /w i č/.

The Second Grade Data

Preliminary Note:

Suppose the hypothesis for the sixth grade had been validated and indeed there was no significant difference in spelling as it relates to dialect. One could easily say that the proposed investigation at the second gradewas unnecessary, since the differences resulting from instruction would be random. But still another question seems to exist: Would instruction of this type (i. e., instruction based upon phoneme-grapheme correspondence rules) still be legitimate, not causing any differences in spelling that could be related to dialect? It could be important here to determine whether the particular phoneme-grapheme correspondence rules with word lists contributed on the basis of MW II and the Stanford study, might not in fact cause differences in results, because the dialect of the pupils did not match that of instruction.

The fact, however, that the sixth grade data did show significant difference between dialect areas, makes the second grade study doubly necessary.

The second grade data differs from the sixth grade in that in the second grade study there was an attempt to measure the effect of teaching certain phoneme-grapheme correspondences. Therefore, we should have for each lesson a pretest, a test of the affect of the teaching, and a posttest. The investigators, limited by a six weeks design, failed to include a pretest for the first lesson and a posttest for the final sixth lesson. Therefore, conclusions are limited concerning the effect of the teaching in the first case and the effect of loss of learning in the second case.

Tables 1 through 6 show the results by phoneme. Included in each table are the mean PE/WE scores for each of the areas and for each testing period--pretest (T_1), test (T_2), and posttest (T_3). F ratios and significant differences are given for 1) simple main effects for each trial, and 2) simple main effects by groups. That is, 1) whether the differences in the PE/WE ratio among all groups in any of the three testing situations was significantly different and 2) whether for any particular group the differences between testing situations were significant.

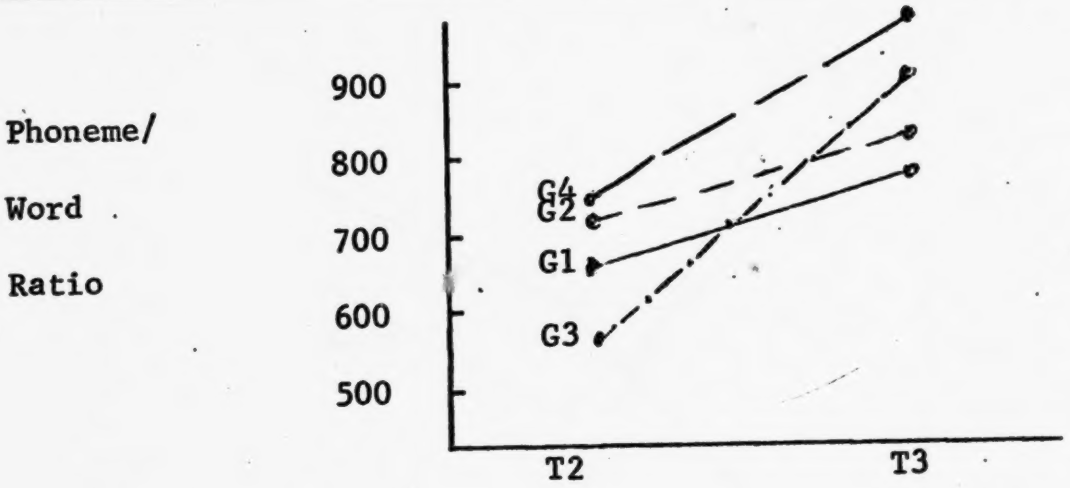
The phoneme /ow/ (Table 1), which was the first of the six test phonemes and, as mentioned, lacks a pretest (T_1), shows no significant difference on the testing between groups in T_2. However, on the posttest (T_3) a significance appears between T_2 and T_3 in Waco and Dracut. Of course, without a pretest, one cannot assume they were better or worse prior to the instruction. But one can suggest that in Areas 3 and 4 the effect of the lesson on /ow/ was less effective. In the sixth grade, /ow/ was also significant in Area 4 compared to Areas 1, 2, or 3. Actually, /ow/ was significantly better in Waco. Dracut (Area 3) in the sixth grade was the worst, yet the best in the second grade, which possibly means that this lesson caused considerable confusion in Dracut since they had significantly more errors in T_3. Waco seems to be in a similar position.

The phoneme /e/ (Table 2) shows significant differences between groups at T_1. The effect of the lessons (T_2) has produced results which show no significant difference between any of the dialect areas. However, T_3 again shows significant difference between groups and some interesting observations can be made about these differences: 1) Group 4 (Waco) which was the best in performance on T_1 becomes the best performer on

TABLE 1

Phoneme /ow/

		Means		N
		T1	T2	
G1	LaGrange	.681	.781	22
G2	Wellington	.714	.803	14
G3	Dracut	.580	.893	33
G4	Waco	.722	.951	21



TRIALS

Simple Main Effects-Trials (df=3,86)

	T2	T3
F=	.07	1.06
Sig=	N.S.	N.S.

Simple Main Effects-Groups (df=1,86)

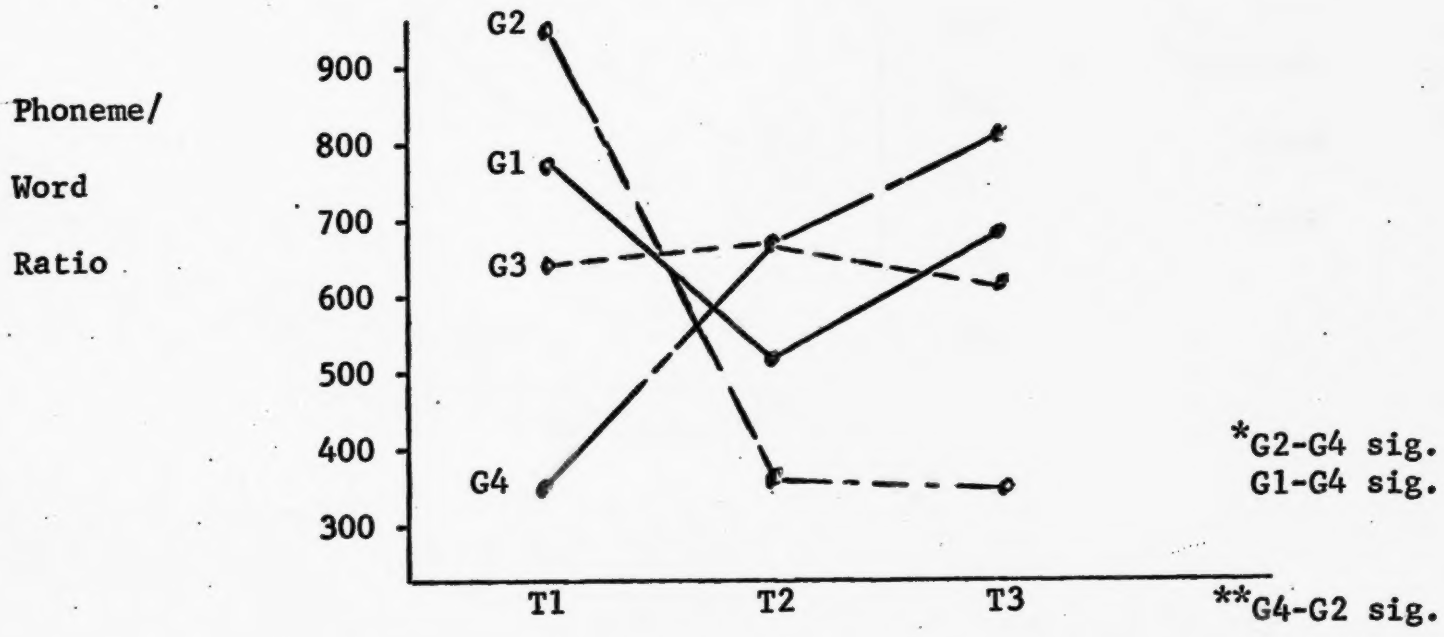
	G1	G2	G3	G4
F=	1.52	0.77	22.37	7.69
Sig=	N.S.	N.S.	.01	.01

(Difference between T2 and T3 for these groups was significant)

TABLE 2

Phoneme /e/

		Means			N
		T1	T2	T3	
G1	LaGrange	.768	.508	.646	21
G2	Wellington	.922	.327	.359	13
G3	Dracut	.621	.646	.596	30
G4	Waco	.345	.644	.809	21



TRIALS

Simple Main Effects-Trials (df=3,81)

	T1	T2	T3
F =	6.94	2.62	3.98
Sig =	.01*	N.S.	.05**

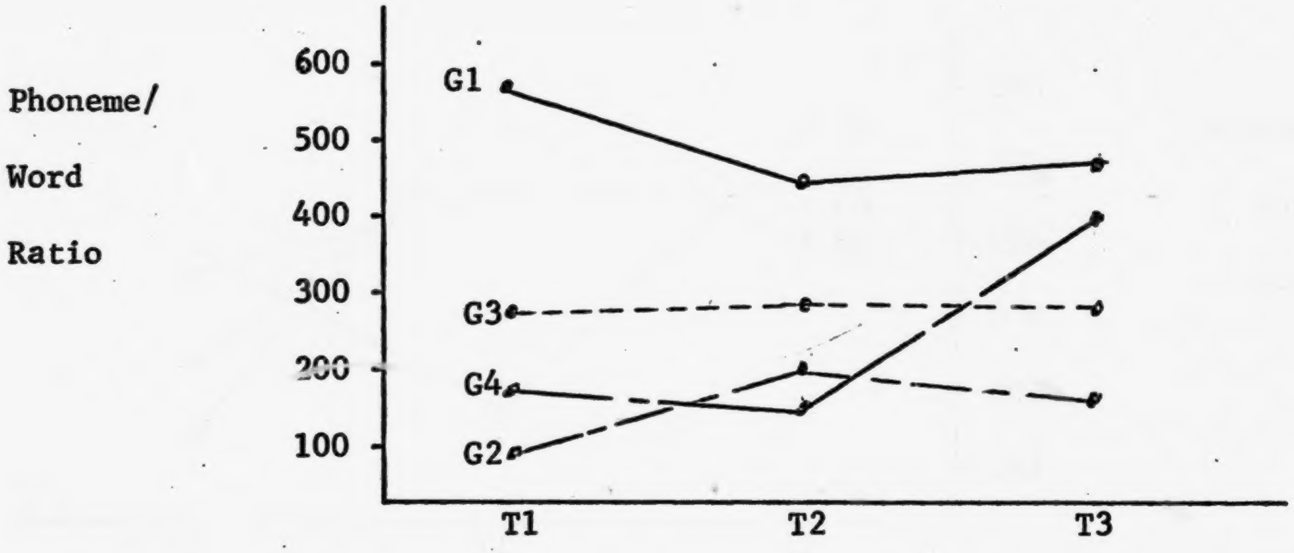
Simple Main Effects-Groups (df=2,162)

	G1	G2	G3	G4
F =	2.62	10.88	.14	8.66
Sig =	N.S.	.01	N.S.	.01
		(Dif. between T1 & T2 sig)		(Dif. between T1 & T3 sig)

TABLE 3

Phoneme /ŝ/

		Means T1	 T2	 T3	N
G1	LaGrange	.585	.428	.454	21
G2	Wellington	.099	.190	.165	24
G3	Dracut	.288	.275	.264	30
G4	Waco	.172	.167	.398	36



TRIALS

Simple Main Effects-Trials (df=3,107)

	T1	T2	T3
F =	11.59	3.55	4.32
Sig =	.01*	.05**	.01***

*G1-G2, 3, 4 sig.

**G1-G4, 2 sig.

***G1-G2 sig.

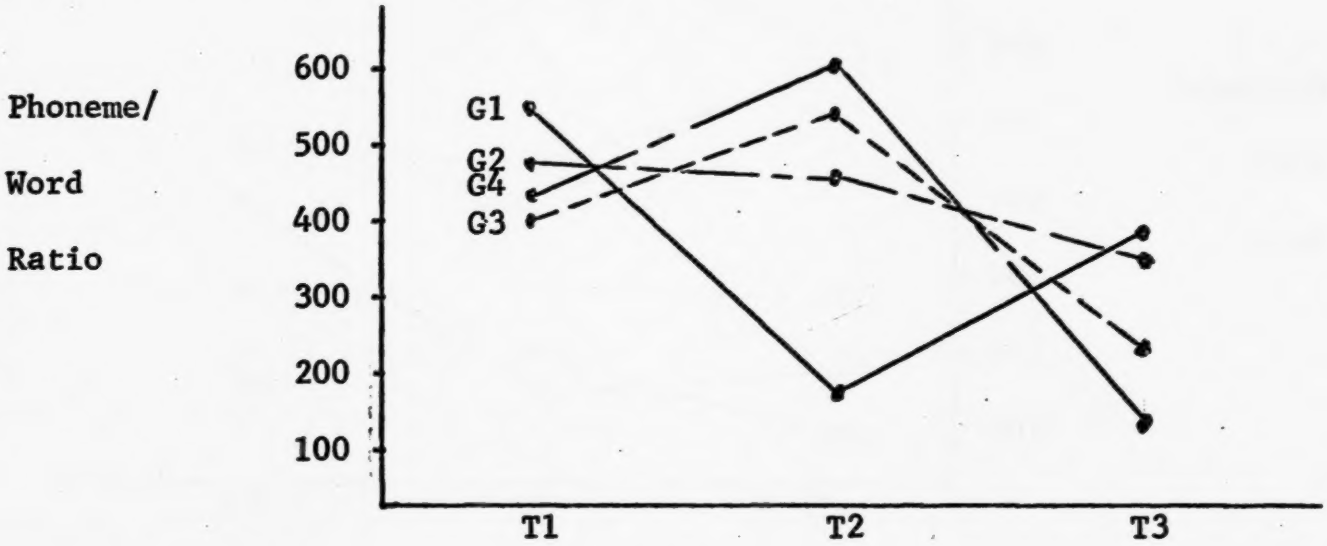
Simple Main Effects-Groups (df=2,214)

	G1	G2	G3	G4
F =	2.17	0.76	0.07	9.12
Sig =	N.S.	N.S.	N.S.	.01 (T2 & T3 sig.)

TABLE 4

Phoneme $/a_1/$

		Means			N
		T1	T2	T3	
G1	LaGrange	.531	.198	.377	16
G2	Wellington	.474	.456	.340	
G3	Dracut	.408	.533	.253	
G4	Waco	.429	.588	.184	



TRIALS

Simple Main Effects-Trials (df=3,99)

	T1	T2	T3
F =	.044	4.37	1.11
Sig =	N.S.	.01*	N.S.

*G1-(G2,G3,G4) sig.

Simple Main Effects-Groups (df=2,198)

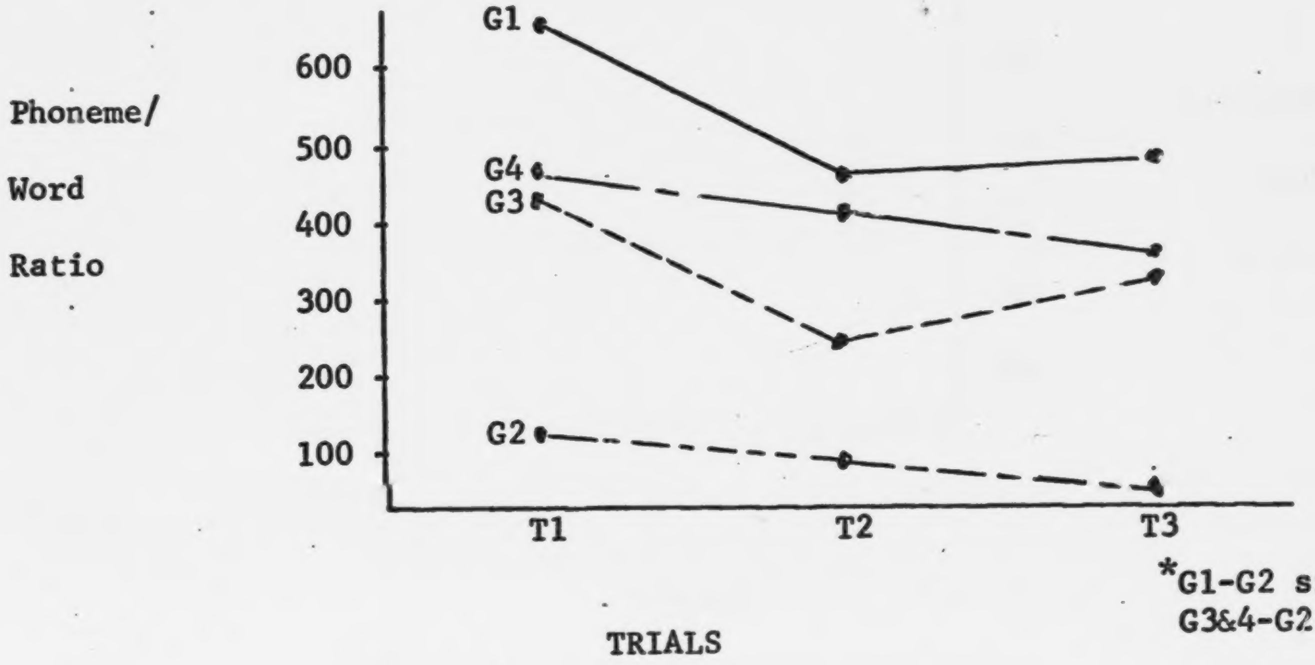
	G1	G2	G3	G4
F =	4.02	1.10	5.35	12.74
Sig =	.01	N.S.	.01	.01

TABLE 5

Phoneme /a_2/

Means

		T1	T2	T3	N
G1	LaGrange	.656	.449	.483	15
G2	Wellington	.120	.100	.056	27
G3	Dracut	.424	.278	.349	31
G4	Waco	.450	.406	.329	37



*G1-G2 sig.
G3&4-G2 sig.

**G1&4-G2 sig.

***G1-G2 sig.
G3&4-G2 sig.

Simple Main Effects-Trials (df=3,106)

	T1	T2	T3
F =	8.02	4.04	5.29
Sig =	.01*	.01**	.01***

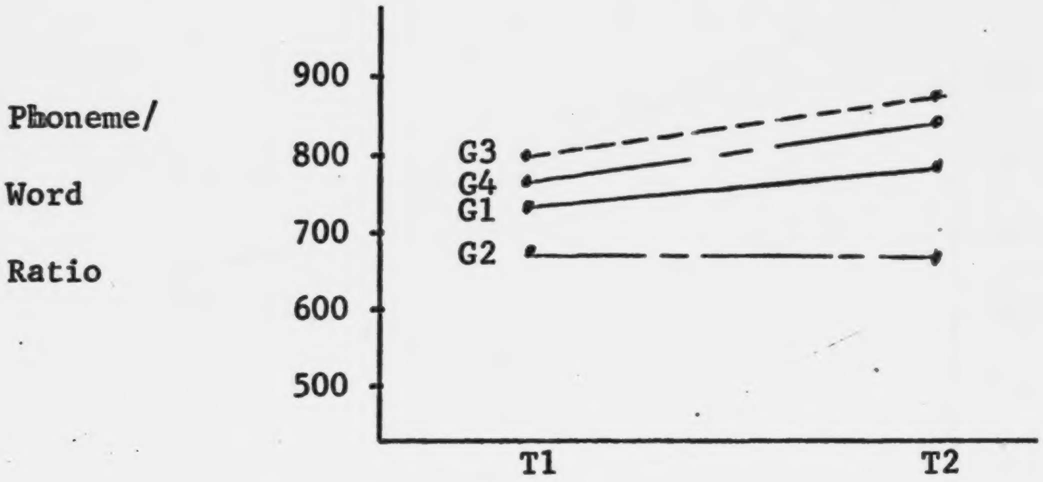
Simple Main Effects-Groups (df=2,212)

	G1	G2	G3	G4
F =	1.64	0.26	1.46	1.22
Sig =	N.S.	N.S.	N.S.	N.S.

TABLE 6

Phoneme /ɔ/

		Means		N
		T1	T2	
G1	LaGrange	.749	.794	15
G2	Wellington	.691	.694	31
G3	Dracut	.790	.867	33
G4	Waco	.764	.854	41



TRIALS

Simple Main Effects-Trials (df=3,116)

	T1	T2
F =	0.51	1.81
Sig =	N.S.	N.S.

Simple Main Effects-Groups (df=1,116)

	G1	G2	G3	G4
F =	0.17	0.00	1.09	1.88
Sig =	N.S.	N.S.	N.S.	N.S.

T_3. Whatever the cause, the feeling here is that dialect is a major contributing factor. A treatment which has been highly effective for one group has been highly detrimental for another and the end result has been divergence significantly as great as the initial divergence but in these two areas in opposite directions from the expected.

The phoneme /š/ (Table 3) was selected as a control, since no dialect variation was expected here. Between groups in T_1 we found a significance between Group 1 versus Groups 2, 3, and 4. In spite of the prediction that /š/ would produce random error, this was not the case. LaGrange had a more difficult time spelling /š/ than did the other groups. It seems quite likely that /š/ may be doubtful as a consonant control.

On T_2 the significances are the same, but in the case of LaGrange the treatment produced a positive result. This observation supports the above suggestion--that is, in LaGrange where this sound was possibly less clear, the treatment seemed to help clear up the problem for some, yet not sufficiently to overcome the original difference between LaGrange and the other three groups.

In T_3 there is an obvious anomaly on the basis of any reasonable expectation, that is, the marked and significant increase in error by students in Waco. Frankly, the explanation escapes us.

The phoneme /a_1/ (Table 4) shows no significance in T_1. After treatment, group 1 demonstrates positive and significant results as compared to Groups 2, 3, and 4. But at T_3 all significances disappeared. Yet at T_3 in terms of groups, Groups 3 and 4 made significant improvement.

In the case of the phoneme /a_2/ (Table 5), significant differences were obtained in T_1 between Groups 1 and 2, and Group 2 versus Groups 3 and 4. The same significances were found to obtain at T_3. Also, the treatment produced no effect between T_1, T_2, or T_3 for any group. They ended up where they started and apparently the lessons had no significant effect.

For the phoneme /ɔ/ (Table 6) no significance between groups was found at either T_1 or T_2 and again no significant difference between trials for any group.

As an after-thought it was decided to use the data to compare groups according to phonemes as well as phonemes according to groups. The following charts show these relationships. In looking at the results of all six phonemes by groups, particular phonemes could be seen as more difficult or easier to spell in different areas and also as more or less susceptible to the treatment.

In LaGrange, (Fig. 1) the phonemes /e/, /a^2/, /š/, and /a^1/ responded positively to the treatment, which were in fact all the phonemes that had the complete program. In the case of /ɔ/, which has a T_1 and T_2 showing the effect of treatment, the performance on T_2 was worse than that on T_1 (although not significant) but it is the only phoneme which was not helped by the treatment. It will also be noted that in no group was /ɔ/ helped by the treatment, and it was also the most difficult phoneme to spell in three areas and the second most difficult in the other.

The Wellington chart (Fig. 2) shows once more an apparent anomaly. Why should /e/ be the most difficult to spell and also respond most dramatically to the treatment? In fact the phoneme /e/ is the only phoneme in Wellington that was significantly affected by the treatment. /a^1/ and /a^2/ appear to be clearly distinguished in Wellington and not significantly affected by the treatment.

In Dracut (Fig. 3) the only phoneme which showed positive and expected effect of the treatment was /a^2/. This is interesting when one considers the postvocalic /r/ phenomenon associated with this dialect area. Since the same effect was found in Wellington and LaGrange, and to some extent in Waco, it would appear that the New England postvocalic /r/ is realized as a part of the vowel spelling and therefore presents no peculiar spelling problem. /a^1/ or /a^2/ offers an obvious comparison--positive effect versus a negative effect concerning the treatment. But the significance was erased at T_3.

In Waco, (Fig. 4) the /a^1/ and /a^2/ we find a very similar pattern to that of Dracut. A startling effect is seen in the case of /e/. It will be remembered that in Wellington /e/ showed a very dramatic improvement with the treatment. In Waco the exact opposite is true. It was spelled quite well in T_1 but continuously deteriorated through T_2 and T_3. While a complete explanation of this phenomenon is not possible on the basis of the data, it is interesting that the /e/-/i/ collapse is particularly noted in the dialect of Waco. Here also is where the /s/ distinction occurred.

In all groups the phoneme /ow/ showed regression from the treatment to the posttest, significant regression in Waco and Wellington, but without a pretest any hypothesis about which way they could have or would have moved would be presumptious.

Comparison of Sixth and Second Grade Data

The sixth grade study was to determine whether dialect influenced the spelling of particular phoneme-grapheme correspondence in

LA GRANGE

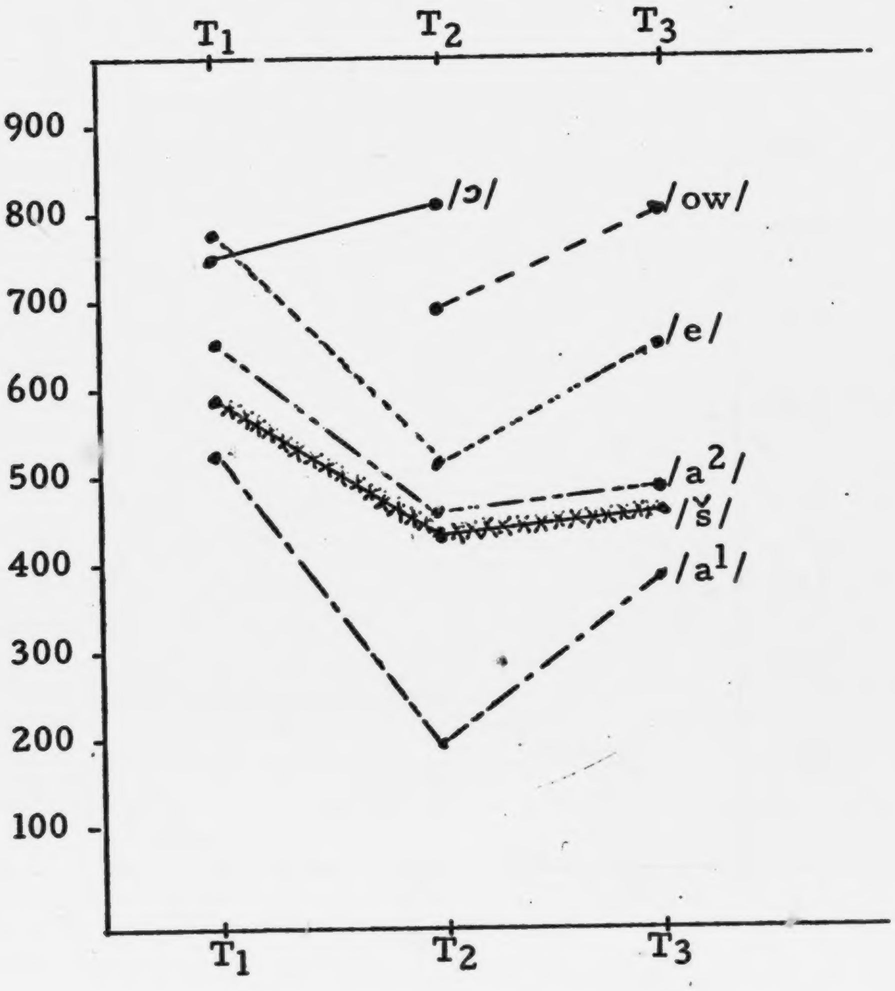


Fig. 1

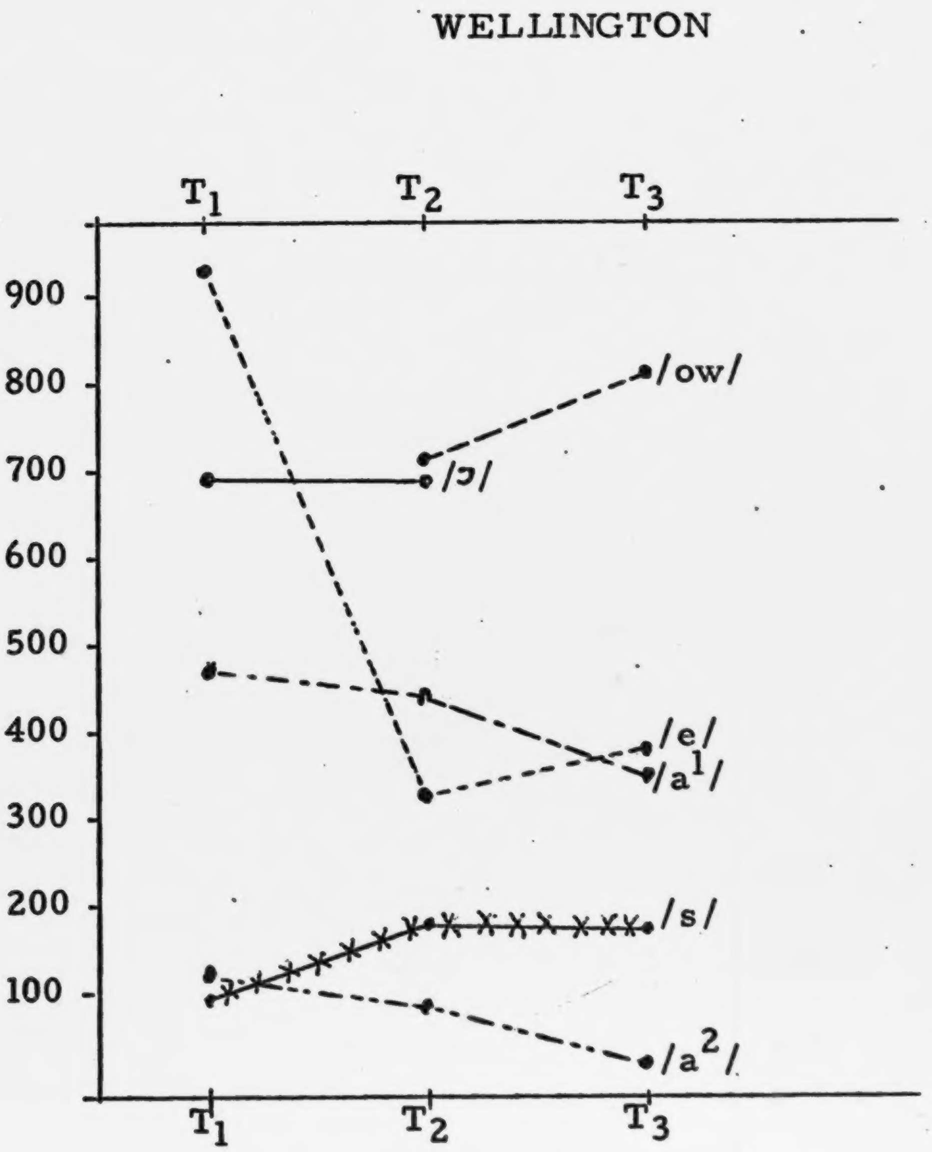

WELLINGTON
T_1
T_2
T_3
900
800
700
600
500
400
300
200
100
/ow/
/ɔ/
/e/
/a^1/
/s/
/a^2/
T_1
T_2
T_3

Fig. 2.

DRACUT

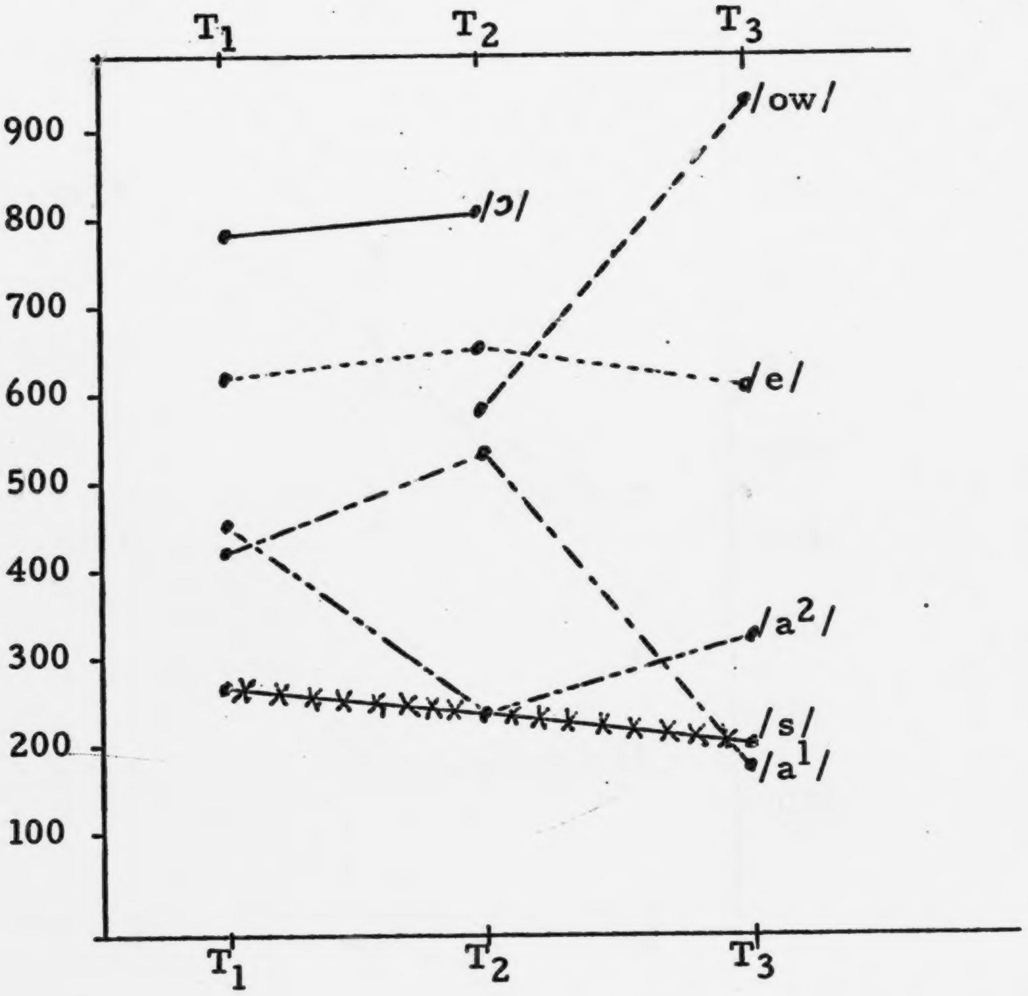


Fig. 3.

WACO

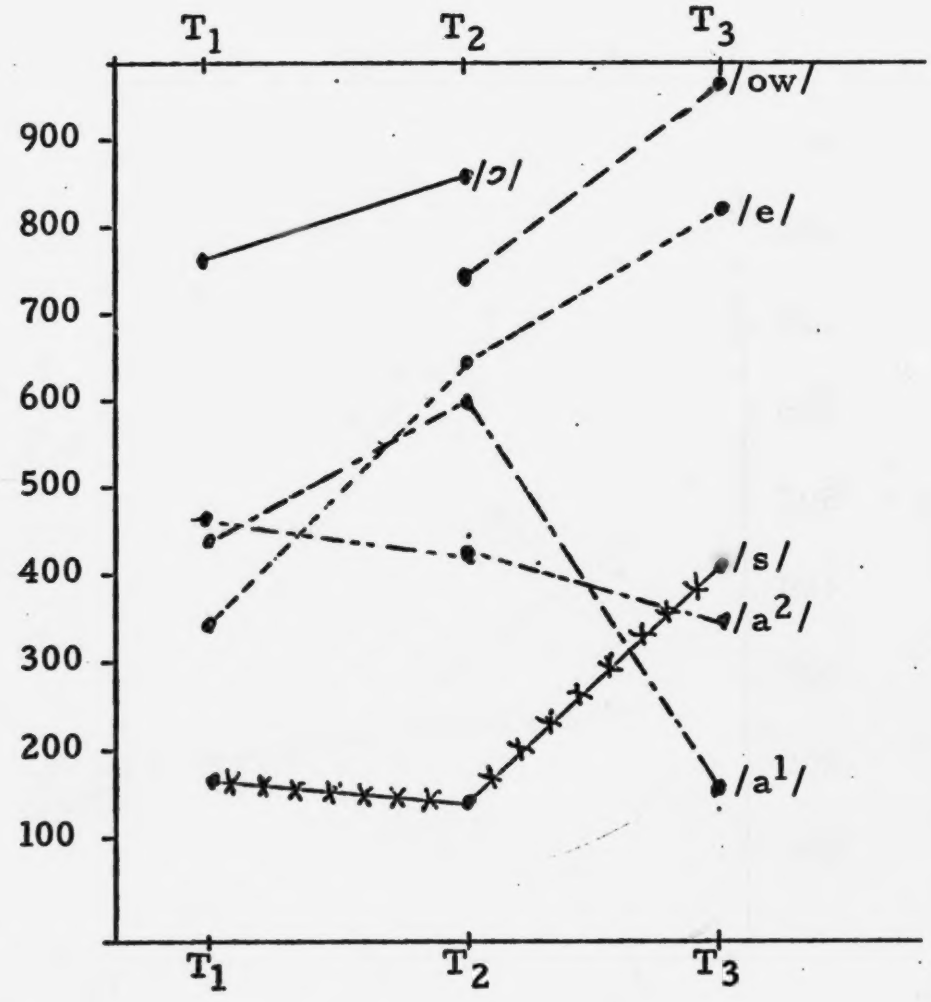


Fig. 4.

accomplished spellers. Having determined this, the second grade study was designed to investigate whether instruction in phoneme-grapheme correspondence (based upon the pronunciation key of MW II) would eliminate this effect. Therefore, the following comparison of the significances found in the sixth grade study (where appropriate) with the treatment effect in the second grade should be the real test of the hypothesis that phonologically-based instruction--of a standard type--will eliminate the effect of dialect.

The comparison, by phoneme, follows:

Table 1

Phoneme /ow/

2ND GRADE			6TH GRADE	
Trial	Sig. Between Groups	Groups Involved	Sig.	Groups Involved
1	NS	---		
2	NS	---	.01	G1, G2, G3 ≠ G4
3	NS	---		

The data indicates here that significant differences between groups found in the accomplished (sixth grade) spellers have been eliminated in the second grade by the treatment, and the final result remained insignificant. Mere statistics often obscure interesting information. Here, for example, the above table indicates that the area in the sixth grade which produced the .01 significance was Waco. Table I (sixth) shows that Waco was significantly better in the spelling of /ow/. Table 1 (second) shows that although we have no T_1 for /ow/ the direction from T_2 to T_3 is significantly negative (that is, poorer spelling was obtained) for Waco. In other words, these facts seem to indicate that the resultant lack of significance between groups was obtained at the expense of confusing Waco pupils about a p-g correspondence which had previously been clear.

Table 2

Phoneme /e/

2ND GRADE			6TH GRADE	
Trial	Sig. Between Groups	Groups Involved	Sig.	Groups Involved
1	.01	G1 ≠ G4 G2 ≠ G4		
2	NS	---	.05	G1, G2 ≠ G3, G4
3	.05	G4 ≠ G2		

In the case of /e/ the significant differences between G1 and G4 were eliminated and the significant difference between G2 and G4 was decreased. This decrease was equal to the difference found between G2 and G4 in the sixth grade. However, the same direction of change accounts for the elimination or decrease of significance between groups. Waco was in the sixth grade better spellers of /e/, and as will be seen from Table 3 their performance was worsened by the treatment and final result was quite negative. G2 and G4 simply reversed position from T_1 to T_3.

No table on the phoneme /š/ will appear, because there was no comparison to be made. /š/ was not measured in the sixth grade testing.

Table 3

Phoneme $/a^1/$

2ND GRADE			6TH GRADE	
Trial	Sig. Between Groups	Groups Involved	Sig.	Groups Involved
1	NS			
2	.01	G1 ≠ G2 G3, G4	---	---
3	NS			

The final results in the second grade show no significance between any groups as was true of the sixth grade. At T_2 the obvious positive and significant affect was in LaGrange. Though not significant in the sixth grade, LaGrange was also the poorer spellers of $/a^1/$. G2 improved in the final analysis but not significantly. G3 and G4 were adversely affected by the treatment, yet at T_3 improved significantly.

Table 4

Phoneme $/a^2/$

2ND GRADE			6TH GRADE	
Trial	Sig. Between Groups	Groups Involved	Sig.	Groups Involved
1	.01	G3, G4, G2, Gl ≠ G2		
2	.01	Gl, G4 ≠ G2	NS	---
3	.0.	G3, G4 ≠ G2 Gl ≠ G2		

The end result in the second grade is no change; that is, the significances remained the same and the relative positions of the groups remained the same. The sixth grade showed no significance. The effect of the dialect here seems to be negated by the later grades, which would be the result of an increased understanding of this particular generalization--that $/a^2/$ is generally associated with /r/. Yet this understanding was, in the second grade, more clearly understood by Dracut and the least understood by LaGrange.

Table 5

Phoneme $/ɔ^1/$

2ND GRADE			6TH GRADE	
Trial	Sig. Between Groups	Groups Involved	Sig.	Groups Involved
1	NS	---	.01	G2, G3 ≠ Gl, G4, G3 ≠ G2
2	NS	---		
3	NS	---		

The sixth grade results of the relative position by groups held as better-to-worse spellers of /ɔ/ is the same in the second grade (T_1), though not significant as was the sixth grade. With the one exception of /e/ in the case of Waco (see Table 2), the phoneme / ^{1}/ was the most difficult to spell initially and in no case showed improvement. One possible explanation for the lack of significance between groups at the second grade level, while significance related to dialect area is found at the sixth grade as follows:

This phoneme /ɔ^1/ at the second grade level is for all groups so difficult that dialect differences are not observable. However, with the development of spelling ability by the sixth grade, the difficulty of spelling generally is minimized, thus the difficulty of spelling /ɔ^1/ is minimized, and the effect of dialect may then be observed.

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

The preceding data were supposed to give answers to the questions: At the sixth grade level do dialectical differences result in dialectically related phonological miscues in the accomplished speller, or at least indicate particular difficulty in particular areas in the choice of a certain written representation? For the second grade the question was whether or not it would make a difference if initial spelling instruction were based on rule-governed phoneme-grapheme correspondences. That is, would dialect difference still affect spelling if a structured lesson on particular phoneme-grapheme correspondences were taught? This, of course, has been the suggestion and claim of authorities and publishers in recent textbooks.

If there are such differences, that is, differences related to dialect, what other factors, other than dialect, might have accounted for this.

The first factor, of course, would be I. Q. Obviously, more intelligent kids will spell better than less intelligent kids. But errors in spelling should be random across all intelligence levels in any dialect, if dialectical differences were not the factor. Even if I. Q. were constant, and equally matched across the areas tested, what if still, one group had a more difficult time spelling a particular sound than another? Thus, if differences in the ability to spell a particular phoneme do appear, and are related to a particular dialect, intelligence then plays, certainly, less than a significant role. Also, it should be remembered that the particular phoneme was the test and not the entire word. The ratio phoneme error over word error chosen for analysis balances spelling ability and relegates intelligence at least to a minor consideration. Bottom and top quartiles were also eliminated, since 1) error was needed, and 2) non-spellers distorted the phoneme error over word error ratio due to random, unrelated, sometimes undetectable spellings (for example, dog spelled zod). This choice of dropping top and bottom quartiles also balances I. Q. as a factor, leaving the I. Q. range more closely matched across all areas.

Was methodology an important variable? In the sixth grade there were no instructions except for testing procedures, therefore methodology should have no effect. Copies of the procedures for teachers can be found in Appendix E. In the second grade, in all cases, the same lesson, by phoneme, was presented by all teachers in the same order at generally the same time of day with the same guides and authors notes. Each teacher was acquainted with the procedure by the investigators prior to their beginning the lessons. They were instructed not to deviate from the text of the lesson. In both the sixth and second grade study, the testing procedures were taped, and found identical.

Could the differences be due to past experiences? All classes and students chosen were determined to have been instructed in spelling on primarily a memorative morphological basis, and administrative personnel, in a description of their spelling and reading programs verified this claim. That is, all past instruction, for both the sixth and the second grade, had been of this nature. All teachers had been determined to have had the same general acquaintance with phonologically based spelling programs, that is, it was at a minimum.

Could any difference found, be related to the teacher or her personality? This, of course, in any case, would be uncontrollable. The only thing that we could control very closely was whether or not the teachers were native to the area and spoke that particular dialect. This we did and found that they all were speakers of that particular dialect.

Therefore, do the results of this study support or refute the hypothesis? That is, 1) would spelling errors be similarly patterned throughout all dialects, and 2) would the instruction of spelling, based on phoneme-grapheme correspondences, eliminate the effect of dialect, if, in fact, it did exist?

In the sixth grade the findings appear to justify, at least tentatively, the following conclusions: 1) It seems clear that the generalizations about certain phoneme-grapheme correspondences, based on the Stanford study, are questionable as to their applicability across dialects. This statement is supported by the different significances resulting from the groupings based on the Stanford study. 2) While the evidence is not overwhelming, significant differences in the proportions of phoneme-error to word-error between the various dialect areas are most easily explained as due to the influence of dialect upon spelling. An alternative explanation, such as a greater familiarity with particular words in the instrument on the part of the class is more difficult to accept, particularly when one considers that the analysis of the raw data utilizes a test of the differences between the proportions of test phoneme error over word error. If word familiarity were playing a significant role, one would expect all parts of the word to be as familiar as another. But this did not appear to be the case. 3) The children in the Sixth grade were utilizing phonological cues to spell. This seems obvious since any spelling resulting from visual representations would have been the same for all, and therefore random across all areas. 4) This study substantiates the findings of the pilot study done by Graham, though certain phonemes of Graham's were not included in this study. All those that were used in Graham's were found to have the same result. Other phonemes which were added seemed to extend and substantiate the rejection of the hypothesis.

In the second grade one might conclude: 1) To the extent that the findings are valid, the results would suggest that the standard code (MW II) of phoneme-grapheme correspondences is less applicable to the speech pattern of one dialect area than it is to another. Of the six phonemes tested, the phonemes /e/ and /a$_2$/ showed significant differences between groups in T1, and the same significant differences between groups in T3, although in the case of /e/, groups 2 and 4 had reversed positions. While /a$_1$/ was not significant either in the sixth grade or the second grade, the effect of treatment in the second grade shows significant differences between groups which justify the above conclusion, that the correspondences here taught are either more or less effective according to the dialect areas (see Table 4). The phoneme /š/, which was not tested in the sixth grade, shows, as before mentioned, an unexpected significant difference between groups on T1, and also in T3, and one significance within groups between trials between T2 and T3, in the case of G4. While this phoneme was not tested in the sixth grade, the results on T1 and the effective treatment would substantiate the conclusion that this phoneme-grapheme correspondence is related to the speech patterns of these various dialect areas. The remaining two phonemes, /ow/ and /ɔ/, were, it will be remembered, each lacking one of the trials. The discussion of /ɔ/, previously given on pages 35, 36, seems clear in establishing this as a difficult phoneme for which the correspondences were simply not effective. In the case of /ow/ there were significant differences between T2 and T3, which again suggest that the correspondences established by the lessons, based on MW II, were unequally effective between and among the various dialect groups. 2) The tabulation of the misspelling at this level also suggests the conclusion that children learning to spell, do in fact, use phonological cues and relate these to specific graphemic optim.

This at least substantiates the rejection of the hypothesis, and puts in question the use of any single "standard" set of phoneme-grapheme correspondences as the basis of spelling instruction in the primary grades, if not at any grade level.

Recommendations

1) To the extent that this study has demonstrated that children do, in fact, utilize phonological cues in spelling, it would seem to confirm

the position taken by those who advocate constructing a spelling curriculum to maximize the opportunity for learners to internalize the phoneme-grapheme correspondence rules. This is not to be taken as a recommendation to adopt wholesale any particular packaged program claiming to be phonologically based. The authors of the Stanford study have always recognized the need for multi-sensory approaches to the teaching of spelling.

2) Therefore, within the limitations of this study, it does appear that evidence has been uncovered that caution should be maintained in utilizing any packaged program distributed nationwide, which is based upon patterning of sound-symbol relationships. Yet teachers need not await complete analysis of possible areas of conflict. Given a spelling program which is based upon phonological patterns, an aware teacher could simply ask the pupils to read the word list and need not be a trained phonetician to detect pronunciations which deviate from the total pattern. The teacher also ought to be aware of the possibility of her own dialect varying significantly from that of the majority of her class, and be willing to make this fact known to the pupils and utilize it in the investigation of these phoneme-grapheme correspondences in the spelling program.

Finally, 3) the insistence of society upon precise spelling ability as a mark of educational and social competence is irrational, but it is there. There are two ways to solve the problem. One, convince the public at large that spelling is a relatively trivial skill--it practically never interferes with communication; two, teach spelling more effectively and efficiently. Older spelling curricula depended largely upon visual memorization of individual words; the modern approach is to capitalize on the alphabetic nature of the orthography and to teach productive generalizations as the primary source of spelling ability. The superiority of one approach over another has yet to be proven. However, if these generalizations must be adapted to the various major dialect areas, a teacher, unaware of this problem, could frustrate to some degree the benefits to be obtained from an expanded program. More specific information could be obtained from an expanded and improved research project such as this study, but in the meantime the evidence appears to be sufficient to offer the above cautions to teachers.

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CITY MEN ON A SEAL HUNT

by Ralph Hedlin

Every Eskimo in the village of Whale Cove was waiting for the chance to kill fresh meat for the family table. And Beekman Pool and I had come to watch them do it.

Pool, a lawyer from New Hampshire, was a "test tourist" sent by the Canadian government. I was writer-photographer for the expedition. We went to Whale Cove to discover whether outsiders would find seal hunting interesting. If it seemed worthwhile, Canada would set up a tourist industry on the west coast of Hudson Bay. Tourist cash would bring new life to the Eskimo economy.

Pool and I left Winnipeg on a Sunday, intending to make the two air hops to the Far North in two days. But storms and fog kept us holed up until the following Saturday, when we finally arrived in Whale Cove.

It was a bleak little community of wooden houses, inhabited by about 150 Eskimos. All winter long the villagers had had to live on store food. Every Eskimo in the area was watching the weather, waiting for the hunt to begin. The arctic spring was almost a month late this year. The temperature hung around zero--too cold for seals to bask beside cracks or breathing holes.

APPENDIX A

COMMON WORDS
ELICITED FROM PICTURES SHOWN
SECOND GRADERS

Word	Picture Shows:
music -	Two bars of music.
wood -	Three boards.
flower -	Flowers blooming.
bracelet -	Hand and wrist with bracelet.
sun -	Sun depicted with eyes and mouth.
orange -	Round ball colored orange..
girl -	A girl.
coat -	A coat.
Mary -	Mother Goose rhyme, Mary Had a Little Lamb with the name shown M---.
chair -	A chair.
ice -	Large block of ice with tongs.
dog -	A dog.
tree -	A tree.
door -	A door, ajar.
mountain-	Two mountain peaks.
car -	An automobile.
ear -	A large human ear.
egg -	An egg with crack.
roof -	Roof of house in darker detail.
chimney -	A chimney of hokse in darker detail.
horse -	A horse.
stocking -	A filled Christmas stocking.
oil -	An oil can shown dripping oil.
glass -	A drinking glass.
hole -	Some earth turned up, with spade beside a hole.
fire -	Logs burning, with red and yellow colors.
syrup -	Bottle of syrup pouring into a plate of pancakes.
shoes -	A pair of shoes.
marry -	Bride and groom in formal dress before minister.
merry -	A decorated Christmas tree, with a blank and the word Christmas, thus ----- Christmas.

APPENDIX B

Lesson 1.

Test C.

1.	goat	The goat had sharp horns.	goat
2.	whole	He ate the whole pie.	whole
3.	bone	The dog buried the bone.	bone
4.	stone	Who threw the stone through the window?	stone
5.	boat	The boat sailed down the river.	boat
6.	toast	Do you like jelly on your toast?	toast
7.	road	Which road do I take to town?	road
8.	rode	He rode the horse in the race.	rode
9.	stove	Mother put the soup on the stove to heat.	stove
10.	hole	There is a hole in my sweater.	hole

Test E.

1.	road	The road led west to California	road
2.	whole	The whole world lies before us.	whole
3.	stove	Our stove is electric.	stove
4.	bone	Watch out for the bone in the fish.	bone
5.	rode	I rode in my brother's new car.	rode
6.	hole	He fell into a hole in the ground.	hole
7.	toast	The toast was burnt to a crisp.	toast
8.	boat	He was fishing from a boat.	boat
9.	goat	The old goat had long whiskers.	goat
10.	stone	A rolling stone gathers no moss.	stone
11.	mote	He threw a mote onto the fire.	mote
12.	stome	The stome was painted blue.	stome
13.	blode	There was no blode in the room.	blode
14.	tove	Have you ever seen a tove?	tove
15.	mobe	My mobe is not working.	mobe

Supplementary Test--Monday

1.	home	My home is on fifth street.	home
2.	pen	May I borrow your fountain pen?	pen
3.	close	Do not close the door.	close
4.	bent	The wire was bent in two places.	bent
5.	rode	He rode in the parade.	rode
6.	lend	Will you lend me some money?	lend
7.	coat	My new coat is very warm.	coat
8.	led	He led me down the path.	led
9.	toast	I like toast for breakfast.	toast
10.	set	Will you please set the table for me?	set

APPENDIX C

Lesson 2.

Test C.

1.	sent	I sent a letter to my friend.	sent
2.	read	Have you read this story?	read
3.	penny	I need one more penny to buy this candy.	penny
4.	pen	My pen is out of ink.	pen
5.	belt	Joe wore a new leather belt.	belt
6.	head	You may go to the head of the class.	head
7.	nest	The bird's nest had three eggs in it.	nest
8.	cent	The lollipop cost one cent.	cent
9.	said	She said she would go.	said
10.	tent	Will you help me put the tent up?	tent

Test E.

1.	get	I hope you get well soon.	get
2.	bent	The pole was bent in the middle.	bent
3.	desk	Put your paper on your desk.	desk
4.	tell	Can you tell me what happened?	tell
5.	said	She said she could not come.	said
6.	led	I led my dog across the street.	led
7.	went	We went to the store today.	went
8.	felt	I felt very sad when I heard the news.	felt
9.	red	Little Red Riding Hood saw the wolf.	red
10.	bed	You should go to bed early.	bed
11.	gilt	Does your gilt work all right?	gilt
12.	med	Any med is good enough.	med
13.	pent	Is there any more pent left?	pent
14.	renny	The book is on the renny.	renny
15.	kint	Is that kint straight enough?	kint

Supplementary Test--Monday

1.	pole	The fishing pole was too long for me.	pole
2.	tone	The piano has a nice tone.	tone
3.	load	That's a heavy load to lift.	load
4.	home	Is you mother home today?	home
5.	boast	Do not boast about your score.	boast
6.	rent	Did you pay the rent this month?	rent
7.	list	Make a list for Santa Claus.	list
8.	fell	He fell off the wagon.	fell
9.	melt	The ice will melt soon.	melt
10.	bet	I bet you can't do it.	bet
11.	ship	The ship will sail to England.	ship
12.	wish	I wish I could go along.	wish
13.	shelf	The can was on the top shelf.	shelf
14.	shell	He found a beautiful shell on the beach.	shell
15.	shoes	Her shoes were too tight.	shoes

Lesson 3.

Test C.

1.	shirt	What color is Bill's shirt?	shirt
2.	dish	Mary broke a dish.	dish
3.	church	We go to church every Sunday morning.	church
4.	motion	Listening to music sets one's feet into motion.	motion
5.	bush	The boy was sitting behind the bush.	bush
6.	ship	The ship will sail tonight.	ship
7.	wash	Monday is the day to wash clothes.	wash
8.	nation	The United States is a nation.	nation
9.	chain	The dog caught his leg in the chain.	chain
10.	shoes	Please put on your shoes.	shoes

Test E.

1.	wish	What do you wish to get for Christmas?	wish
2.	nation	Which nation did you live in?	nation
3.	shell	He found a beautiful shell on the beach.	shell
4.	mission	The airplane was sent on a secret mission.	mission
5.	ashes	There was nothing left but the ashes of burnt paper.	ashes
6.	fish	My family and I caught three fish.	fish
7.	short	Will you please hand me a short piece of string.	short
8.	rush	Rush to the candy store before it closes.	rush
9.	shame	The boy hung his head in shame.	shame
10.	mesh	Will the machine parts mesh with one another?	mesh
11.	posh	The posh was a bright green color.	posh
12.	shum	Will you buy me some shum at the store?	shum
13.	lation	There is one lation for every person.	lation
14.	chim	Will you chim the lights for me please?	chim
15.	gish	We had gish for supper.	gish

Supplementary Test

1.	rest	After our rest we will take a walk.	rest
2.	felt	John felt sick after eating three candy bars.	felt
3.	mint	Do you like mint candy.	mint
4.	penny	Jake, will you lend me a penny?	penny
5.	fed	Bob and Bruce fed the new colt some grass.	fed
6.	shoot	Who will shoot the gun next?	shoot
7.	rash	Ten of the girls broke out with a rash.	rash
8.	chip	Be careful not to chip your tooth.	chip
9.	shone	The sun shone all afternoon.	shone
10.	shin	Have you ever been kicked in the shin?	shin
11.	chop	I must chop some wood for the fireplace.	chop
12.	stop	Did you stop for the red light?	stop
13.	wash	Wash your hands and face before eating.	wash
14.	clock	The clock in our room is broken.	clock
15.	rot	The apple will rot if you do not eat it.	rot

Test 4.

Test C.

1.	fog	In London there is a great deal of fog.	fog
2.	rock	Bill found a small rock in his shoe.	rock
3.	body	Take good care of your body.	body
4.	stop	You must stop for a red street light.	stop
5.	swamp	Are there fish in a swamp?	swamp
6.	orange	My spelling book is orange.	orange
7.	top	The paper is in the top drawer of the desk.	top
8.	want	I want to play with you.	want
9.	block	Don't stand in the doorway and block traffic.	block
10.	wash	Wash your hands before eating.	wash

Test E.

1.	orange	I ate an orange for lunch.	orange
2.	fox	What color is the fox?	fox
3.	pond	The ducks swam in the pond.	pond
4.	rod	He hit his head on the metal rod.	rod
5.	wash	Mother will wash clothes today.	wash
6.	rot	Eat the apple or it will rot.	rot
7.	sod	We will have to sod our lawn this year.	sod
8.	chop	Will you chop some wood for the fireplace?	chop
9.	rob	It is a crime to rob.	rob
10.	golf	Does your father play golf?	golf
11.	blop	Will you please bring me the blop?	blop
12.	tox	Jack brought a small tox home for Susan.	tox
13.	wand	How far is the wand from school?	wand
14.	tog	Be careful or the tog will get away.	tog
15.	lod	Will you please bring me the fishing lod?	lod

Supplementary Test

1.	mesh	The machine parts must mesh together.	mesh
2.	star	Have you ever seen a falling star?	star
3.	chain	The truck pulled the car with a chain.	chain
4.	wash	I will wash the car for you tomorrow.	wash
5.	cot	At camp we slept on a cot.	cot
6.	drop	Please don't drop the eggs.	drop
7.	shell	Did you find an egg shell in the salad?	shell
8.	rod	I use a rod to aid me when lifting weights.	rod
9.	park	My family went to the park Sunday.	park
10.	rush	Do not rush through your supper.	rush
11.	hard	The cement dried very hard.	hard
12.	arm	Luke fell and broke his arm.	arm
13.	swamp	The swamp is a very dull color.	swamp
14.	cart	Will you help me cart the package home?	cart
15.	nation	We are all of one nation.	nation

Test 4.

Test C.

1.	fog	In London there is a great deal of fog.	fog
2.	rock	Bill found a small rock in his shoe.	rock
3.	body	Take good care of your body.	body
4.	stop	You must stop for a red street light.	stop
5.	swamp	Are there fish in a swamp?	swamp
6.	orange	My spelling book is orange.	orange
7.	top	The paper is in the top drawer of the desk.	top
8.	want	I want to play with you.	want
9.	block	Don't stand in the doorway and block traffic.	block
10.	wash	Wash your hands before eating.	wash

Test E.

1.	orange	I ate an orange for lunch.	orange
2.	fox	What color is the fox?	fox
3.	pond	The ducks swam in the pond.	pond
4.	rod	He hit his head on the metal rod.	rod
5.	wash	Mother will wash clothes today.	wash
6.	rot	Eat the apple or it will rot.	rot
7.	sod	We will have to sod our lawn this year.	sod
8.	chop	Will you chop some wood for the fireplace?	chop
9.	rob	It is a crime to rob.	rob
10.	golf	Does your father play golf?	golf
11.	blop	Will you please bring me the blop?	blop
12.	tox	Jack brought a small tox home for Susan.	tox
13.	wand	How far is the wand from school?	wand
14.	tog	Be careful or the tog will get away.	tog
15.	lod	Will you please bring me the fishing lod?	lod

Supplementary Test

1.	mesh	The machine parts must mesh together.	mesh
2.	star	Have you ever seen a falling star?	star
3.	chain	The truck pulled the car with a chain.	chain
4.	wash	I will wash the car for you tomorrow.	wash
5.	cot	At camp we slept on a cot.	cot
6.	drop	Please don't drop the eggs.	drop
7.	shell	Did you find an egg shell in the salad?	shell
8.	rod	I use a rod to aid me when lifting weights.	rod
9.	park	My family went to the park Sunday.	park
10.	rush	Do not rush through your supper.	rush
11.	hard	The cement dried very hard.	hard
12.	arm	Luke fell and broke his arm.	arm
13.	swamp	The swamp is a very dull color.	swamp
14..	cart	Will you help me cart the package home?	cart
15.	nation	We are all of one nation.	nation

Lesson 5

Test C.

1.	bark	The bark on the tree was rubbed off.	bark
2.	yard	We have a white fence around our yard.	yard
3.	heart	Get plenty of exercise and care for your heart.	heart
4.	mark	Please do not mark on your arm with the pen.	mark
5.	ark	Have you ever seen an ark?	ark
6.	cart	The donkey pulled the cart.	cart
7.	chart	Did you chart your progress in spelling?	chart
8.	car	Mike's father bought a new car.	car
9.	party	You are all invited to my Christmas party.	party
10.	scarf	Wrap a scarf around your neck to keep warm.	scarf

Test E.

1.	farm	My parents and I live on a farm.	farm
2.	part	Do you have a part in the class play?	part
3.	dark	When the sun goes down it gets dark outside.	dark
4.	arm	Bill twisted his arm yesterday.	arm
5.	heart	When you run your heart pumps faster.	heart
6.	arch	The boys built an arch.	arch
7.	harm	Please don't harm the baby.	harm
8.	card	We were missing a card from the deck.	card
9.	bar	Can you chin yourself on the bar?	bar
10.	scar	Greg has a scar on his arm from a burn.	scar
11.	shar	Have you ridden in Tim's new shar?	shar
12.	larp	Mike caught a larp in the lake.	larp
13.	parsh	Your father has a very parsh voice.	parsh
14.	nark	Have you ever heard a dog nark?	nark
15.	bart	May I have a bart of your dessert?	bart

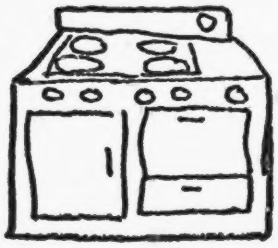
Supplementary Test

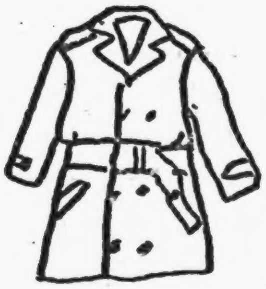
1.	crop	My father had a good corn crop last fall.	crop
2.	fork	Eat with a fork instead of with your fingers.	fork
3.	doll	All I want for Christmas is a new doll.	doll
4.	born	Which day of the week were you born?	born
5.	frog	I have a pet frog at home.	frog
6.	lawn	Will you please mow the lawn?	lawn
7.	block	Our school is one block from my house.	block
8.	wall	The lady backed the car into the brick wall.	wall
9.	chop	Would you chop some wood for the fireplace?	chop
10.	salt	Mother forgot to salt the meat.	salt
11.	arch	An arch is a curved support.	arch
12.	bar	Can you lift the metal bar?	bar
13.	harm	You will be punished if you harm the roses.	harm
14.	scar	That cut will leave a deep scar.	scar
15.	arch	Was it the Romans who developed the arch support?	arch

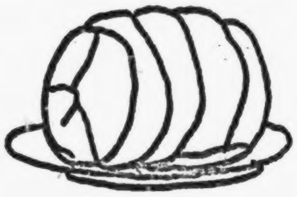
LESSON I

A.

1. Say the names of picture 1 - 3. Hear the vowel sound in each one.







2. How is the long o sound in stove spelled? What other study words have a helping letter e at the end?

3. Find the Study Word that rhymes with the name of picture 3. How is the long o sound spelled in both words?

4. Find two study words that rhyme with the name of picture 2. How is the long o sound spelled in all three words?

5. Which Study Word begins with the long o sound? How is it spelled in that word?

B.

1. Find two Study Words that sound just alike but are not spelled alike. Are there any more?

2. Name the words missing in these two sentences. How are they different?

We ____________________ on a very winding ________________.

We dug a ______________ in the sand and put a _____________ pail of water in it.

STUDY WORDS home soap road bone coat
stove rope whole broke rode hole
goat oak toast stone boat

C. What have you learned?

1. Your Study Steps will help you learn in which words the long o sound is spelled oa and in which it is spelled with o and helping a.

2. Number a paper from 1 through 16. Your teacher will tell you what word to write after each number.

D. Building Spelling Power

1. Write on a paper the letters for each of the two ways you have learned to write the long o sound. Then write a word that you have not studied in this lesson for each of the two ways. Your teacher will help you if you have trouble.

2. Here are some common words that look like they should have the long o sound, but they don't. Can you read these words?

love	move	dove	shove

Write each word in a sentence.

E. Final Test.

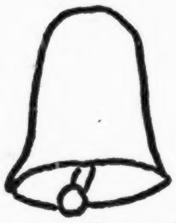
Number a paper from 1 through 15. Your teacher will tell you which word to write after each number.

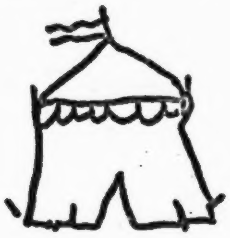
Appendix C - cont'd.

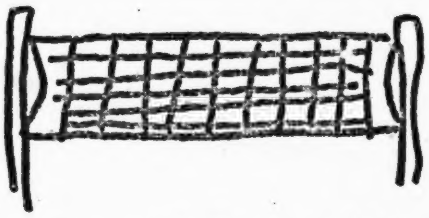
LESSON II

A.

1. Say the names of pictures 1 - 3. Hear the vowel sound in each one.







2. How is the short e sound spelled in these words? In what other ways is this vowel sound spelled in your study words?

3. Say the study words bell and belt. How many sounds to you hear in each word? How is the last sound in each spelled?

B.

1. What two study words sound alike but are spelled differently?

2. What two study words mean the same thing but are spelled differently and do not sound at all alike?

3. Which study word can you write into both of these sentences but it is pronounced differently in each one?

   a. Do you want to __________ this book?
   b. I have already ___________ it.

4. What is another word that sounds like the word you put in sentence b. above? This word is not in your study words. How do you spell it?

STUDY WORDS

get
sent
bell
pen
bed
desk
tent
penny
said
went
net
read
nest
head
cent
belt

C. What have you learned?

1. Use your Study Steps to study this week's words. Notice those words where the short e sound is not spelled e.

2. Number a paper from 1 to 10. Your teacher will tell you what word to write after each number.

D. How many words can you say that begin with one of the sounds in the first row and have the short e in the middle and end with one of the sounds in the last row?

b		
m		t
p	e	d
s		n
h		

Try to write these words, even if they are not in your study words for this week. Your teacher will help you if you have trouble.

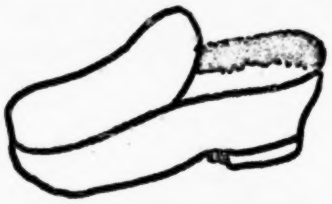
E. Final Test

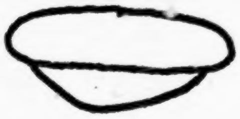
Number a paper from 1 through 15. Your teacher will tell you which word to write after each number.

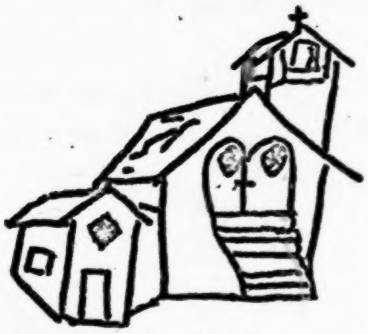
LESSON III

A.

1. Say the names of picture 1 - 3.







2. How is the first sound in the name of picture 1. spelled?

3. Is this the same sound you hear at the end of the name of the second picture?

4. Is it the same sound you hear at the beginning and the end of the name of picture 3. ? How is this sound spelled?

5. Use your Study Steps on your study words for this week.

B.

1. Do you hear the first sound in shoes in some study words where the sound is not spelled sh? Write the words.

2. Underline the letters in the word you have written that you think spell this sound.

3. What part of all three of these words is spelled just the same?

4. Which of your study words means "more than one" of something?

5. Write the plural form for these study words:

dish__________ wish__________ bush__________

When a word ends in a sound spelled sh what do we add to make the word plural?

STUDY WORDS

shoes
dish
chain
ashes
motion
ship
wish
wash
shell
nation
dash
shirt
church
shut
bush
action

C. What have you learned?

1. Use your Study Steps to study this week's words. Notice those words where the sh sound is not spelled sh.

Appendix C - cont'd.

2. Number a paper from 1 to 10. Your teacher will tell you what word to write after each number.

D. Add the first sound of ship or the first sound of chip to each of the following word endings and if you form a word write it as it should be spelled.

__ut
__op
__ine

__ore
__art
__ange

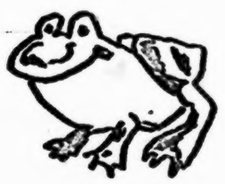
__in
__ack
__ain

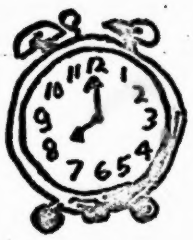
Appendix C - cont'd.

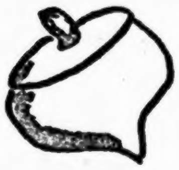
LESSON IV

A.

1. Say the names of pictures 1 - 3.







2. Is the vowel sound the same in all these words?
How is this sound spelled in them?

3. Say the names of all the study words. You teacher will help you if you can't read any. Do you hear the same vowel sound in all the study words?
If you don't, which ones are different?

4. What other letter besides o is used to spell the vowel sound in the study words?

5. Use your study steps on your study words for this week.

STUDY WORDS

frog
block
fox
stop

clock
wash
dog
want

rock
body
rod
swamp

top
fog
pond
orange

B.

1. Remember how you made the words dish, wish and bush plural in last week's lesson? Say the plural of each study word in the first column - which words have plural endings like wish? Write them on a piece of paper.

2. In the words where the vowel sound we hear in the study words is spelled a, what sound and what letter come before the vowel? Write these words on your paper.

3. How many sounds do you hear in the word fox? How many letters are used to spell the word?

C. What have you learned?

1. Use your Study Steps to study this week's words. Notice those words where the o sound is not spelled o.

Appendix C - cont'd.

2. Number a paper from 1 to 10. Your teacher will tell you what word to write after each number.

D.

1. Write the study word that would come first in a dictionary? The two that would come last?

2. Write the study word that ends in the same sound that ends the word Miss?

3. Write all the study words that end in the same sound that ends the word like. How is this sound spelled in these study words?
Is the vowel in like long or short? ______________
Is the vowel in clock long or short? ______________
If the vowel before the k-sound is long we usually spell the k-sound ______________.
If the vowel before the k-sound is short we usually spell the k-sound ______________.

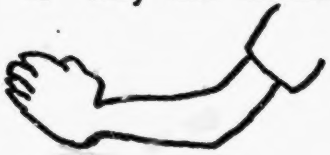
4. Think of two other words that you know that follow the rules you have just written.

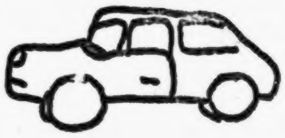
Appendix C - cont'd.

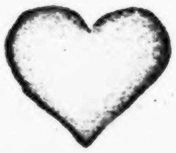
LESSON V

A.

1. Say the names of pictures 1 - 3.







2. Is the vowel sound the same in all these words? How is it spelled in the names of the first two pictures? How is it spelled in the name of the last picture?

3. What sound follows the vowel in all these words? When the r sound follows a vowel it almost always changes the sound of the vowel. Say the word cat and the word car. Do you hear the difference in the vowel sounds of these two words?

4. Use your Study Steps on your Study words for this week.

B.

1. Which Study Word will fit into both of these sentences?

Three feet make one ____________________.
We keep our dog in the back _____________.

2. Which study word will fit into these two sentences?

Our dog does not ______________ at strangers.
The _________________ on the tree is very rough.

3. Which study words begin with one sound that is spelled with two letters?

4. How many pairs of study words can you find where one word is made by adding just one sound to the beginning or end of the other? Like these: cart is made by adding a t sound to car.

STUDY WORDS

arm
bark
sharp
cart

dark
car
yard
mark

farm
party
scarf
heart

chart
ark
far
part

C. What have you learned?

1. Use your Study Steps to study this week's words. Notice those words where the a sound is not spelled a.

2. Number a paper from 1 - 10. Your teacher will tell you what word to write after each number.

D. See if you can fill in the blanks with words that have the same vowel sound followed by r as the study words for this week.

1. The rainbow made an ______________ across the sky.
2. The man is a soldier in the _______________.
3. An ace is a playing __________________.
4. He threw a _________________ at the target.
5. The bright ________________ shone in the sky.
6. A man who cuts your hair is a _________________.
7. The problem is to __________________ for me.
8. In our ___________________ class we paint pictures.
9. China is a country ___________, _____________ away.
10. That is a very _____________ knife.

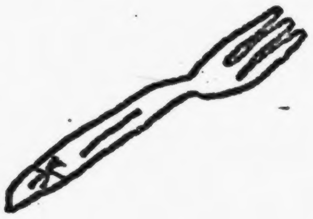
Final Test

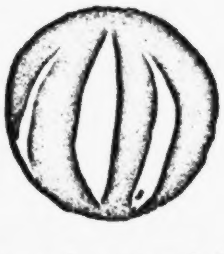
Number a paper from 1 through 15. Your teacher will tell you which word to write after each number.

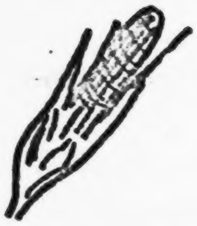
LESSON VI

A.

1. Say the names of pictures 1 - 3.







2. Do you hear the same vowel sound in each word? How is it spelled in pictures 1 and 3? How is the vowel sound spelled in picture 2?

3. In pictures 1 and 3 what sound follows the vowel in the name of each picture? Do you remember what you learned in your last lesson about this sound?

4. What sound follows the vowel in the name of picture 2?

5. Use your Study Steps on your study words for this week.

B.

1. Which study words have the vowel sound spelled differently from the way it is spelled in pictures 1, 2 or three? Make three lists of words on a piece of paper. In the first list write all of the study words where the vowel sound is spelled like it is in the names of pictures 1 and 3. In the second list write all of the study words where the vowel sound is spelled like it is in the name of picture 2. In the third list write all of the study words where the vowel sound is spelled in a third way.

2. When this vowel sound is heard last in a word, how is it usually spelled?

C. What Have You Learned.

Number a paper from 1 to 10. Your teacher will tell you what word to write after each number.

STUDY WORDS

salt
wall
storm
born
draw
ball
corn
smell
law
cork
short
hawk
talk
fork
north
warm

D.

1. Write the study words that rhyme with ball.

2. Write the study word that rhymes with born.

3. Is there a study word that rhymes with hawk?

4. Which study word begins with a consonant sound that is spelled with two letters?

5. In what ways is the /k/ sound spelled in the study words?

E. Making Sure You Know.

Number a paper from 1 to 15. Your teacher will tell you what words to write after each number.

TEST No. 1

1. stature	He was of modest stature.	stature
2. whet	The broth should whet your appetite.	whet
3. riddance	Good riddance to bad rubbish.	riddance
4. prudent	They held a very prudent discussion.	prudent
5. swab	Those involved in the mutiny had to swab the deck daily.	swab
6. tarnish	They cleaned the tarnish off the silver.	tarnish
7. audition	The audition was held in the hotel.	audition
8. scoff	We can not scoff at his ideas.	scoff
9. plaintiff	The plaintiff was an average man.	plaintiff
10. extremist	The extremist had no idea there was a curfew.	extremist
11. noble	It was very noble of him to refuse the position.	noble
12. nephew	The poison was found on his nephew.	nephew
13. louse	Only a louse would exploit his friends.	louse
14. doily	A doily was placed on the table in the lounge.	doily
15. implore	I implore you not to go to the morgue.	implore
16. faculty	The faculty will enclose a letter to the dean.	faculty
17. embrace	I cannot embrace your nephew for his actions.	embrace
18. imprint	An imprint was made with the prong of a fork.	imprint
19. groove	The groove in the snow presented a peril to the toboggan.	groove
20. modest	He was a man of modest stature.	modest
21. whab	A large whab was seen jumping around.	whab
22. beffer	Sam gave the beffer a piece of candy.	beffer
23. stip	Don't stip while eating dinner.	stip
24. plude	The boy and his plude got lost.	plude
25. wobby	That's a wobby in the tree with him.	wobby

APPENDIX D

TEST No. 2

1.	marvel	I marvel at the assortment of people in the world.	marvel
2.	autopsy	The vet performed an autopsy on the rooster.	autopsy
3.	lofty	The nominee had several lofty ideas to stop the war.	lofty
4.	quaint	The noble lived in a quaint castle.	quaint
5.	theory	His theory was to launch a massive campaign.	theory
6.	slope	The pro's skis were like magnets on the icy slope.	slope
7.	cubic	We will be pouring fifteen cubic feet of cement.	cubic
8.	gout	It was decided he was suffering from the gout.	gout
9.	exploit	Let's exploit his great talents and imaginary ideas.	exploit
10.	amber	An amber colored fluid was found in the crater.	amber
11.	entitle	This does not entitle you to an audition.	entitle
12.	rougher	Things are bound to get rougher today.	rougher
13.	infidel	The infidel was thought to be the absentee.	infidel
14.	juvenile	We will employ a juvenile to play the lead in the play.	juvenile
15.	toboggan	The descent of the toboggan was rapid.	toboggan
16.	plaza	A roar was heard from the plaza.	plaza
17.	accordance	In accordance with the by-laws, the festival will be in June.	accordance
18.	prong	The object was to form a four-prong attack.	prong
19.	cascade	After the thaw, the water will cascade to the river.	cascade
20.	magnesium	Magnesium was used in the secret formula.	magnesium
21.	parvin	A parvin was destroyed in the battle.	parvin
22.	aubid	The aroma was aubid to the nose.	aubid
23.	woff	After dinner we will go to the woff.	woff
24.	adade	He was adade by the scenery.	adade
25.	webe	Take the webe to mom.	webe

TEST No. 3

1.	probe	After we probe we must swab the wound clean.	probe
2.	curfew	In accordance with curfew rules we must leave.	curfew
3.	joust	I implore you not to joust with the white knight.	joust
4.	turmoil	Turmoil at the armory was avoided.	turmoil
5.	assortment	Please include an assortment of material.	assortment
6.	massive	The treasure was found in a massive crater.	massive
7.	descent	The descent from the mountain was rougher than we expected.	descent
8.	whim	This whim of yours is bound to get you in trouble.	whim
9.	lagoon	A crane was seen in the lagoon.	lagoon
10.	artichokes	These artichokes were picked on the slope.	artichokes
11.	cornea	His cornea was thought to be damaged.	cornea
12.	foster	Stubbornness does not foster good relationships.	foster
13.	baste	We will use the sauce to baste the meat.	baste
14.	nominee	The nominee has lofty ideas this year.	nominee
15.	opera	He was a devout opera fan.	opera
16.	throat	It slid down his throat very quickly.	throat
17.	fumigate	If we fumigate there will be an odor.	fumigate
18.	devout	He was noted as a devout extremist.	devout
19.	employ	We must employ soft tactics.	employ
20.	gourd	A soggy gourd was found in a trench.	gourd
21.	whope	He located a whope to help him.	whope
22.	depuse	Can we afford to depuse the boy?	depuse
23.	whout	The whout was found in my back yard.	whout
24.	stam	I won't stam if you go.	stam
25.	whoy	Can a whoy live under water?	whoy

TEST No. 4

1. average	He caught an average-sized trout.	average
2. welt	The welt on his back caused him to flinch.	welt
3. flint	Flint was used to create the spark.	flint
4. include	We will include a flute solo this year.	include
5. soggy	A soggy doily resulted from the spill.	soggy
6. cardinal	On the marble statue was a cardinal.	cardinal
7. auburn	Her auburn hair glistened in the sunlight.	auburn
8. mossy	A mossy tree stump was our picnic table.	mossy
9. crater	An amber glow came from the crater.	crater
10. boast	It was his vanity that caused him to boast.	boast
11. decent	He is considered a decent nominee by most.	decent
12. future	We will embrace the future with care.	future
13. lounge	We would like to buy an auburn colored lounge chair.	lounge
14. broiled	The broiled mushrooms will whet his appetite.	broiled
15. empire	The infidel was refused entrance into the empire.	empire
16. vanity	Vanity would not allow him to appoint his friend.	vanity
17. trench	He didn't bother to fill the trench with dirt.	trench
18. flinch	I flinch to think of the autopsy report.	flinch
19. fluid	Can magnesium be made into a fluid?	fluid
20. object	The object was to examine the cornea.	object
21. wensy	He became wensy after the results were in.	wensy
22. winsil	Harry chased the winsil up a tree.	winsil
23. floon	Don't floon around in here.	floon
24. whaz	The real whaz is over here.	whaz
25. sparm	Joe sent the sparm back to his brother.	sparm

TEST No. 5

1. armory	The plaintiff was seen at the armory.	armory
2. morgue	A probe was made into the newspaper morgue.	morgue
3. broth	She spilled broth on her collar.	broth
4. create	We will create an opera with sparkle to its music.	create
5. absentee	That does not entitle you to be an absentee.	absentee
6. hotel	An imprint was found in the hotel lobby.	hotel
7. mutiny	Riddance of the gold will save us from mutiny.	mutiny
8. pounce	We will pounce on those who boast of defeat.	pounce
9. appoint	Please appoint prudent people to judge him.	appoint
10. peril	One should not scoff at the peril.	peril
11. magnets	Magnets are a marvel to me.	magnets
12. festival	At the festival a joust was held with brooms.	festival
13. slid	It slid into the groove.	slid
14. flute	In the quaint little plaza a man played a flute.	flute
15. collar	A welt was seen under his collar.	collar
16. marble	We ordered a marble angel from the catalog.	marble
17. sauce	The sauce has burnt my throat.	sauce
18. soft	A cascade of soft water fell into the lagoon.	soft
19. crane	How are a cardinal and a crane alike?	crane
20. idea	I had an idea that the louse in this case was not a juvenile.	idea
21. worny	Can't that worny be trusted?	worny
22. drong	Put the drong back quickly.	drong
23. whame	Carry the whame to your mom.	whame
24. streez	We will not allow a streez in here.	streez
25. womer	The womer was lost in the dark.	womer

TEST No. 6

1. odor	The artichokes had a terrible odor.	odor
2. amuse	His new empire seemed to amuse him.	amuse
3. bound	He is bound to get the flint wet in the storm.	bound
4. poison	A poison was extracted from the mossy plants.	poison
5. roar	A roar came up from the crowd.	roar
6. imaginary	Can you name an imaginary character in the story?	imaginary
7. enclose	I will enclose 50 cubic feet in your first order.	enclose
8. insult	Your insult will only foster hard feelings.	insult
9. rooster	My rooster can't tell time.	rooster
10. bother	Don't bother to fumigate until next week.	bother
11. sparkle	Remove the tarnish and it will surely sparkle.	sparkle
12. thaw	Will we ever thaw out from this cold day?	thaw
13. catalog	He sent for a mail order catalog.	catalog
14. angel	How do you scold an angel?	angel
15. secret	The cook had a secret recipe to baste a chicken.	secret
16. scold	Another insult will require me to scold you severely.	scold
17. refuse	I refuse to follow your every whim.	refuse
18. trout	I don't particularly like broiled trout.	trout
19. voyage	All on the voyage suffered from gout due to their diet.	voyage
20. pouring	We will pounce on the enemy after pouring our guns on them.	pouring
21. buter	He found a buter hidden in the closet.	buter
22. tort	Each guest received a tort.	tort
23. wouk	He used his wouk to open the door.	wouk
24. aboint	We must use the aboint immediately.	aboint
25. zoring	Can we start zoring the plans today?	zoring

TEACHER INSTRUCTIONS -- 6th Grade Study

The following procedure is to be adhered to as closely as is humanly possible. If you have further questions, please write - or better yet, phone - me at the University of Nebraska (Phone: Area 402, 472-2565).

I. Testing

Testing is to be done in the following manner. There are six tests to be given on six consecutive days. Begin, for example, on a Monday and continue giving the six tests (in order) through that week and the following Monday. Please choose a time that will allow for the children's best effort. The time chosen should be the same for each testing session.

In advance of your testing period, set up a tape recorder which is to be used for taping the testing session. Merely resume your taping at the next testing period--please indicate by voice the test number you will be giving in that particular session. Tape is provided in your materials.

In actually giving the test, be careful to give the words in their order, first pronouncing the word, then the sentence, then the word. Do not repeat (warn kids ahead of time) any words which children may have missed until the end of the testing period. At this time shut off the recorder and repeat the necessary items. Try to keep these repeats down to a minimum. Laughing at the sentences or particularly the nonsense words is all right as long as the children can hear clearly your pronunciation of the word.

If a child should be absent, if possible have that child sit somewhere with the recorder and listen and take the test as you dictated it.

You may grade these tests if you wish so that the children can see their results, but as little discussion of the tests as possible is best. We wish you to be assured, and have you assure your class that they are not expected to do exceptionally well on these tests--they are deliberately designed to give us sufficient error on which to base the study.

II. Classroom Information Chart

Before I leave your school I will leave with you a Classroom Information Chart. There are a few columns which you will need to fill in. These are:

APPENDIX E

*1. The child's IQ score (if available).
*2. The child's Verbal score (if available).
    *Latest results, indicating grade, when given, and name of tests.
3. Comments on the child as to how native he and his family are to the particular area (let's say within a hundred miles of your particular city or town.)

In other words, how long and where has his residency been?

Please understand that all this information is classified, and students' names will become only numbers prior to any and all analysis of the data for this project. We are not testing spelling ability nor especially are we testing you or their earlier teachers.

III. Spelling and Reading Programs

Please include for me a description of your reading and spelling programs. Explain your school's (not just yours) general procedures, methods, types of activities, texts, and other relevant descriptions.

IV. Returning the Materials

At the close of your testing (after all six test periods are complete and the majority of absent students have made up the test) please forward to us:

1. The six tests for each pupil
2. The classroom information sheet
3. Your description of the reading and spelling programs
4. The tape of your testing sessions.

Upon receiving these materials we will return to you the cost of postage and your honorarium. My address is

Richard T. Graham
Tri-University Project
University of Nebraska
Lincoln, Nebraska 68508

Most likely we will have discussed all of the above before our departure. It is hoped that this study will not present too much of a burden to you and you will actually see how vital all this is in the near future.

I appreciate very much the cooperation you are giving us and we hope that your contribution will help us all--teachers and kids alike.

Sincerely,
Richard T. Graham

APPENDIX F

Data on Insignificant Phonemes

Areas:
001 LaGrange, Georgia
002 Wellington, Ohio
003 Dracut, Massachusetts
004 Waco, Texas

1. /u/

Treatment Area	1	2	3	4
Sample Size	31	38	32	49
Mean	.573	.554	.642	.511
Standard Deviation	.213	.252	.236	.294

F Ratio 1.7356
Significance NS

2. /a^1/

Treatment Area	1	2	3	4
Sample Size	31	38	32	49
Mean	.257	.205	.209	.150
Standard Deviation	.224	.262	.209	.211

F Ratio 1.4771
Significance NS

3. /a^2/

Treatment Area	1	2	3	4
Sample Size	31	38	32	49
Mean	.117	.076	.128	.072
Standard Deviation	.176	.135	.171	.151

F Ratio 1.1976
Significance NS

4. /ey/

Treatment Area	1	2	3	4
Sample Size	31	38	32	49
Mean	.566	.573	.510	.612
Standard Deviation	.225	.134	.250	.290

F Ratio 1.2046
Significance NS

5. /iy/

Treatment Area	1	2	3	4
Sample Size	31	38	32	49
Mean	.443	.489	.491	.383
Standard Deviation	.233	.206	.217	.198

F Ratio 2.4597
Significance NS

APPENDIX F
Data on Insignificant Phonemes
Cont'd.

Areas:
001 LaGrange, Georgia
002 Wellington, Ohio
003 Dracut, Massachusetts
004 Waco, Texas

6. /iu/	Treatment Area	1	2	3	4
	Sample Size	31	38	32	49
	Mean	.491	.376	.447	.338
	Standard Deviation	.215	.247	.227	.308
	F Ratio	2.6708			
	Significance	NS			

7. /r/	Treatment Area	1	2	3	4
	Sample Size	31	38	32	49
	Mean	.142	.131	.103	.071
	Standard Deviation	.109	.206	.137	.140
	F Ratio	1.7731			
	Significance	NS			

8. /t/	Treatment Area	1	2	3	4
	Sample Size	31	38	32	49
	Mean	.100	.172	.089	.130
	Standard Deviation	.142	.194	.180	.161
	F Ratio	1.6695			
	Significance	NS			

9. /f/	Treatment Area	1	2	3	4
	Sample Size	31	38	32	49
	Mean	.415	.485	.481	.424
	Standard Deviation	.190	.184	.168	.216
	F Ratio	1.2983			
	Significance	NS			

EXHIBIT G

AREA WACO

TOTAL NUMBER OF STUDENTS 44

SECOND GRADE

Most Frequent Misspellings

	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/ow/2										
1. home	0	0								
2. close	14	8	o	6	oe	2				
3. rode	9	8	oa	4	a	2	o	2		
4. coat	7	7	o-e	3	oo	1	oe	1	ao	1
5. toast	12	12	o	6	aa	1	ow	1	o-e	1
/ow/3										
6. pole	19	17	o	12	ou	2	ow	2	oa	1
7. tone	19	17	o	14	oa	1	oo	1	ou	1
8. load	42	41	o-e	20	o	16	ow-a	1	ow-e	1
9. home	0	0								
10. boast	38	36	o	28	o-e	5	ou	1	oe	1
/e/1										
11. pen	2	1	i	1						
12. bent	7	3	i	3						
13. lend	13	3	i	2	o-e	1				
14. led	7	5	e-e	3	ie	1	i	1		
15. set	7	6	e-e	2	ei	2	ea	1	i	1
/e/2										
16. rent	22	12	i	7	a	2	ao	1	e-e	1
17. fell	28	15	e-e	4	a	4	i	3	i-e	1
18. melt	18	14	i	8	e-e	2	ao	1	a	1
19. bet	8	7	a	2	i	2	e-e	1	un	1
20. list	21	18	e	11	i-e	3	e-e	1	ee	1
/e/3										
21. rest	3	1	a	1						
22. felt	9	3	i	2	a	1				
23. penny	6	3	i	2	ee	1				
24. mint	33	33	e	29	ie	3	ei	1		
25. fed	10	8	ee	7	i	1				

AREA WACO
Page 2

	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/š/1										
26. ship	19	11	s	10	ch	1				
27. wish	10	2	ch	1	se	1				
28. shell	29	6	s	5	ch	1				
29. shelf	27	6	s	4	ch	2				
30. shoes	27	2	s	2						
/š/2										
31. rash	11	4	ch	1	s	1	se	1	ss	1
32. shoot	32	13	s	12	[illegible]	[illegible]				
33. shone	36	5	s	5						
34. shin	20	3	s	2	ch	1				
35. chip	17	3	c	3						
/š/3										
36. mesh	8	2	ch	2						
37. chain	38	3	c	1	tr	1	[illegible]	[illegible]		
38. shell	18	3	s	3						
39. rush	9	1	s	1						
40. nation	33	30	shn	2	shon	2	toin	2	cin	1
/al/1										
41. chop	5	1	oo	1						
42. stop	4	0								
43. wash	24	23	o	19	or	1	r	1	ae-a	1
44. clock	20	2	o-e	1	a	1				
45. rot	4	3	o-e	2	ao	1				
/al/2										
46. wash	10	10	o	9	o-e	1				
47. cot	7	1	a	1						
48. drop	9	3	or	2	a	1				
49. rod	6	5	a	3	oo	1	oe	1		
50. swamp	30	25	o	10	op	6	ap	4	or	1

AREA WACO
Page 3

	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/a1/3										
51. crop	16	3	a-e	2	a	1				
52. doll	5	2	a	2						
53. black	18	7	a	3	e	1	oa	1	ou	1
54. frog	8	3	or	1	ra	1	o	1		
55. chop	9	4	a	2	o-e	1	io	1		
/a2/1										
56. cart	18	15	or	5	o	5	ro	3	er	1
57. arm	17	12	or	4	a	2	o	2	ar-e	1
58. hard	23	16	or	7	o	5	ae	1	er	1
59. park	18	11	a	3	o	2	ro	2	or	2
60. star	12	8	or	4	re	2	ae	1	ol	1
/a2/2										
61. arch	18	15	or	4	a	2	o	2	re	2
62. bar	16	16	o	4	or	4	a-e	4	e	1
63. harm	20	15	o	4	or	4	am	2	oa	1
64. scar	30	12	or	4	o	3	a-e	1	er	1
65. arch	16	12	or	3	o	2	re	2	ro	1
/a2/3										
66. cart	19	13	or	4	ra	3	ar-e	2	a	2
67. party	20	6	a	4	ra	1	or	1		
68. dark	20	11	or	3	ar-e	2	o	2	r	1
69. bark	16	9	ar-e	3	or	2	ro-e	1	ro	1
70. chart	21	12	or	7	ar-e	2	o-e	1	r	1
/ɔ1/1										
71. lawn	40	40	o	21	o-e	10	ow	2	ou	2
72. wall	16	14	o	9	a-e	2	o-e	1	ai	1
73. salt	27	23	o	17	o-e	2	ow	1	ai	1
74. fork	28	14	ar	3	ro	3	a	2	o	2
75. born	15	7	a	2	ar	2	or-e	1	oa	1

/ɔ1/2	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
76. war	32	29	o-e	7	a-e	7	o	7	or	2
77. yawn	43	41	o	19	o-e	5	a	3	a-e	2
78. stork	30	23	ar	11	o	4	a	3	oe	1
79. salt	27	23	o	15	a-e	2	or	1	ai	1
80. cork	28	20	a	5	ar	5	o	4	oo	2

SECOND GRADE

AREA LaGRANGE **TOTAL NUMBER OF STUDENTS** 24

	W/E	P/E	Most Frequent Misspellings							
			Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/ow/2										
1. home	2	0								
2. close	13	6	o	2	a	1	oe	1	oles	1
3. rode	8	6	oa	3	oe	1	ie	1	o	1
4. coat	5	4	o	2	ao	1	ai	1		
5. toast	21	14	o	10	a	1	u	1	oe	1
/ow/3										
6. pole	17	12	o	6	oo	3	o-oe	1	o-ry	1
7. tone	16	11	o	7	oy	1	ou	1	a-a	1
8. load	20	16	o	8	o-e	3	oo	2	on	1
9. home	2	0								
10. boast	21	16	o	13	oo	1	aso	1	oe	1
/e/1										
11. pen	9	7	i	5	u	1	a	1		
12. bent	16	7	ei	2	i	2	e	1	ia	1
13. lend	22	16	y	9	i	2	ye	1	ia	1
14. led	16	11	a	3	ea	2	o	1	io	1
15. set	13	11	a	6	i	2	ea	1	a-at	1
/e/2										
16. rent	14	7	i	2	a	1	e-e	1	ea	1
17. fell	6	4	a	3	ai	1				
18. melt	17	10	a	3	ai	2	o	1	eio	1
19. bet	11	3	a	2	ea	1				
20. last	18	11	e	8	ei	1	a	1	eia-e	1
/e/3										
21. rest	9	5	a	4	ea	1				
22. felt	14	6	a	4	ea	1	le	1		
23. penny	5	2	u	1	i	1				
24. mint	20	17	e	11	ei	2	ea	2	er	1
25. fed	3	3	ee	2	a	1				

AREA LaGRANGE
Page 2

	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/š/1										
26. ship	15	10	s	10						
27. wish	15	10	s	3	ch	2	si	1	~~st~~	~~1~~
28. shell	17	10	s	10						
29. shelf	21	13	s	11	cs	1	sc	1		
30. shoes	19	10	s	10						
/š/2										
31. rash	14	10	s	5	ss	2	~~ts~~	~~1~~	~~ste~~	~~1~~
32. shoot	22	10	s	10						
33. shone	21	6	s	3	ch	1	~~ci~~	~~1~~	~~se~~	~~1~~
34. shin	19	7	s	4	ch	2	c	1		
35. chip	17	8	c	4	j	2	sh	1	t	1
/š/3										
36. mesh	16	5	h	2	~~ct~~	~~1~~	a	1	se	1
37. chain	18	6	c	3	sh	2	c	1		
38. shell	15	7	s	6	c	1				
39. rush	13	5	h	2	~~st~~	~~1~~	ch	1	ss	1
40. nation	17	14	sh	2	sn	2	iton	1	sion	1
/al/1										
41. chop	11	3	oa	1	i	1	r	1		
42. stop	1	0								
43. wash	7	6	o	3	i	1	oi	1	a	1
44. clock	14	7	oo	6	o-e	1				
45. rot	15	6	a	2	oa	2	ai	1	oo	1
/al/2										
46. wash	2	2	ai	1	o	1				
47. cot	9	3	o	1	oo	1	u	1		
48. drop	15	4	oo	2	a	1	o	1		
49. rod	6	1	ou	1						
50. swamp	17	8	o	3	ow	2	oa	1	ap	1

AREA LaGRANGE
Page 3

	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/a1/3										
51. crop	12	8	a	1	ar	1	ar-e	1	e	1
52. doll	4	2	a	1	oo	1				
53. black	10	3	are	1	oo	1	a	1		
54. frog	8	7	or	3	o	3	orn	1		
55. chop	12	2	oar	1	oo	1				
/a2/1										
56. cart	13	8	or	3	o	3	ra	1	ora	1
57. arm	13	7	ro	2	or	2	ea	1	o	1
58. hard	14	11	o	4	or	2	a	1	u	1
59. park	17	14	or	4	o	4	ra	2	au	1
60. star	4	0								
/a2/2										
61. arch	16	3	on	1	a	1	r	1		
62. bar	13	8	or	2	o	1	e	1	o-e	1
63. harm	10	6	or	2	o	1	ra	1	oa	1
64. scar	10	4	or	1	o	1	a-e	1	~~ite~~	~~1~~
65. arch	15	4	a	1	on	1	or	1	r	1
/a2/3										
66. cart	8	5	or	3	r	1	ra	1		
67. party	13	9	ra	2	o	2	ru	2	o-e	1
68. dark	10	8	or	3	ro	2	a	1	o	1
69. bark	9	7	or	2	ro	2	rou	1	o	1
70. chart	15	8	or	3	a	2	ro	1	ra	1
/ɔ1/1										
71. lawn	15	12	o	7	o-e	3	ow	1	ar	1
72. wall	6	4	o	2	e	2				
73. salt	15	9	o	5	oa	1	ar	1	oe	1
74. fork	10	7	~~ro~~	~~1~~	~~ar~~	~~1~~	~~ore~~	1	oow	1
75. born	12	9	a-e	2	o-e	1	ou	1	oo	1

P1/2	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
76. war	19	15	o	4	o-e	4	oo	2	ou	1
77. yawn	22	21	o	7	o-e	3	oo	2	ar	2
78. stork	16	11	o	4	ro	2	ar	1	u	1
79. salt	10	5	ai	2	o	2	ou	1		
80. cork	11	7	ro	3	a	2	r-e	1	ar	1

EXHIBIT G

AREA WELLINGTON TOTAL NUMBER OF STUDENTS 35 SECOND GRADE

	W/E	P/E	Most Frequent Misspellings							
			Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/ow/2										
1. home	4	4	oe	1	eo	1	oa	1	ow	1
2. close	10	7	oa	3	ow	3	oe	1		
3. rode	7	7	oa	3	ow	2	ou	1	oa-e	1
4. coat	4	4	aa	1	o-e	1	oo-e	1	o	1
5. toast	12	8	o	2	o-e	2	oae	2	oy	1
/ow/3										
6. pole	19	12	oa	6	o	3	ow	2	oe	1
7. tone	13	11	oa	5	o	4	ow	1	oo	1
8. load	24	24	o-e	17	o	5	ow	2		
9. home	5	5	oa	2	o	2	ow	1		
10. boast	19	17	o	8	o-e	4	oo	3	ow	2
/e/1										
11. pen	6	5	a	2	i-e	2	ei	1		
12. bent	14	11	e-e	3	a	3	a-e	1	ea	1
13. lend	14	12	e-e	4	a	3	a-e	1	i	1
14. led	13	12	e-e	3	a-e	3	ae	2	ea	1
15. set	9	8	a-e	3	a	2	i	2	e-e	1
/e/2										
16. rent	19	10	a	3	ea	2	o-e	2	ia	1
17. fell	17	8	a-e	1	e-e	1	i-e	1	a	1
18. melt	19	7	i	2	ea	1	o	1	o-e	1
19. bet	12	9	a-e	3	a	2	ai	1	ea	1
20. list	19	17	e	8	i-e	5	ea	2	ei	1
/e/3										
21. rest	6	5	a	3	u	1	i	1		
22. felt	8	4	a	3	u	1				
23. penny	8	1	i	1						
24. mint	19	7	e	5	iu	1	i-e	1		
25. fed	9	8	i	3	ee	3	a	1	ae	1

AREA WELLINGTON
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	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
✓ /s/1										
26. ship	12	2	ch	1	s	1				
27. wish	19	2	se	1	h	1				
28. shell	18	1	s	1						
29. shelf	22	3	s	3						
30. shoes	25	0								
✓ /s/2										
31. rash	7	3	tion	1	s	1	st	1		
32. shoot	18	2	s	2						
33. shone	17	2	s	2						
34. shin	15	4	s	3	ch	1				
35. chip	9	5	j	2	sh	2	c	1		
✓ /s/3										
36. mesh	19	3	s	2	csh	1				
37. chain	14	5	c	4	j	1				
38. shell	9	0								
39. rush	8	0								
40. nation	9	7	shun	2			sen	1	shon	1
/al/1										
41. chop	11	6	oo	1	a	1	o-e	1	a-e	1
42. stop	0	0								
43. wash	18	18	o	9	oo	2	a-e	2	ar	1
44. clock	12	1	i-e	1						
45. rot	15	11	o-e	6	i-e	1	e	1	oo	1
/al/2										
46. wash	12	9	o	3	i	3	ar	2	oa	1
47. cot	4	4	a	2	ai	1	u	1		
48. drop	9	4	or	1	ai	1	ar	1	u	1
49. rod	2	2	a	2						
50. swamp	15	13	o	9	u	1	au	1	ai	1

	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/a1/3										
51. crop	8	6	or	3	ar	1	o-e	1		
52. doll	5	4	a	4						
53. black	13	1	a	1						
54. frog	9	7	or	5	ou	1	aro	1		
55. chop	3	1	a	1						
/a2/1										
56. cart	5	4	ra	2	er	1	ir	1		
57. arm	3	1	ra	1						
58. hard	2	2	ir	1	r	1				
59. park	2	1	ri	1						
60. star	3	1	a	1						
/a2/2										
61. arch	7	5	r	2	ra	1	or	1		
62. bar	3	2	o	1	o-e	1				
63. harm	3	2	o-e	1	or	1				
64. scar	15	1	o-e	1						
65. arch	17	2	ra	2						
/a2/3										
66. cart	4	1	or	1						
67. party	12	2	or	2						
68. dark	5	3	or	3						
69. bark	2	0								
70. chart	6	1	a	1						
/ɔ1/1										
71. lawn	22	21	o	8	ow	4	oa	2	or	2
72. wall	14	12	o	9	o-e	2	e	1		
73. salt	21	12	o	5	aw	3	or	2	ow	1
74. fork	7	7	ro	4	oa	1	ar	1	ou	1
75. born	9	7	ro	2	ar	1	a	1	ou	1

AREA WELLINGTON
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/ɔ1/2	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
76. **war**	16	14	o	11	ee	1	ae	1	y	1
77. **yawn**	22	20	o	8	al	3	ar	2	or	2
78. **stork**	7	4	ar	2	o	2				
79. **salt**	16	13	o	6	aw	3	or	3	ar	1
80. **cork**	9	7	o	3	ar	2	aw	1	or-e	1

EXHIBIT G

AREA DRACUT **TOTAL NUMBER OF STUDENTS** 37 **SECOND GRADE**

	W/E	P/E	Most Frequent Misspellings							
			Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/ow/2										
1. home	1	1	ou	1						
2. close	21	10	o	3	ow	3	oo	2	oa	1
3. rode	10	9	oa	7	oe	1	a	1		
4. coat	5	5	o-e	3	o	1	ao	1		
5. toast	17	13	o-e	8	o	5				
/ow/3										
6. pole	18	14	ow	5	o	3	ow-e	1	oo	1
7. tone	19	13	o	6	oa	3	ow	2	a	1
8. load	28	28	o-e	12	o	8	a	2	e	2
9. home	1	1	a	1						
10. boast	31	30	o	17	o-e	10	ao	1	a	1
/e/1										
11. pen	13	11	i	4	a	3	o	1	a-e	1
12. bent	15	13	a	3	e-e	3	et	1	ea	1
13. lend	20	17	a	4	e-e	4	ea-e	1	i	1
14. led	15	15	e-e	5	a	3	i-e	1	o-e	1
15. set	17	17	e-e	6	ea	3	a-e	2	ae	2
/e/2										
16. rent	18	15	a-e	3	e-e	3	a	3	oa	1
17. fell	17	15	a	7	e-e	4	ea	2	a-e	2
18. melt	20	17	a	9	e-e	3	a-e	2	ea	1
19. bet	14	12	a	4	e-e	3	ea	2	a-e	2
20. list	22	19	e	12	i-e	4	a	2	ei	1
/e/3										
21. rest	9	9	a	5	e-e	2	oa	1	a-e	1
22. felt	15	9	a	6	a-e	2	e-e	1		
23. penny	5	2	e-e	1	ee	1				
24. mint	16	16	e	7	i-e	3	a-e	2	a	1
25. fed	15	15	ee	8	e-e	3	en	1	ea	1

AREA DRACUT
Page 2

	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/s/1										
26. ship	14	6	s	4	g	1	[redacted]	[redacted]		
27. wish	18	7	ch	2	s	1	c	1	ht	1
28. shell	26	11	s	10	[redacted]	[redacted]				
29. shelf	23	11	s	7	[redacted]	[redacted]	g	1	[redacted]	[redacted]
30. shoes	23	3	s	2	[redacted]	[redacted]				
/s/2										
31. rash	8	4	s	2	ss	1	c	1		
32. shoot	20	2	s	1	g	1				
33. shone	22	6	s	6						
34. shin	12	3	s	2	ch	1				
35. chip	15	10	sh	3	c	2	g	2	i-e	1
/s/3										
36. mesh	17	5	s	1	ch	1	[redacted]	1	se	1
37. chain	21	3	c	2	j	1				
38. shell	8	3	s	2	sm	1				
39. rush	12	6	ch	3	s	2	[redacted]	[redacted]		
40. nation	11	8	sh	3	tine	1	tieon	1	[redacted]	[redacted]
/al/1										
41. chop	14	9	o-e	4	al	1	i-e	1	oo	1
42. stop	5	3	oa	1	e-e	1	o-e	1		
43. wash	7	5	o	2	o-e	1	i	1	oa	1
44. clock	3	1	o-e	1						
45. rot	11	7	o-e	7						
/al/2										
46. wash	6	6	o	4	i	1	oa	1		
47. cot	8	7	o-e	5	ar	1	on	1		
48. drop	7	3	o-e	2	ar	1				
49. rod	3	3	o-e	2	a	1				
50. swamp	15	7	o	5	ou	1	ar	1		

AREA DRACUT
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	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/a1/3										
51. crop	15	5	oo	1	ar	1	o-e	1	a	1
52. doll	2	1	a	1						
53. black	14	4	oa	2	a	1	o-e	1		
54. frog	6	2	or	2	o-e	1	ar	1		
55. chop	12	9	ar	2	a	2	o-e	1	a-e	1
/a2/1										
56. cart	12	0								
57. arm	1	0								
58. hard	18	12	a	2	ra	2	er	1	ir	1
59. park	17	13	ra	3	a	2	i-e	2	e	1
60. star	6	5	a-e	2	e	1	i	1	ae	1
/a2/2										
61. arch	15	7	a	4	ru	1	har	1		
62. bar	11	2	a-e	1	o	1				
63. harm	13	8	a	3	u	1	o	1	i-e	1
64. scar	20	4	i	1	i-e	1	ar-e	1	or	1
65. arch	18	7	a	5	hi	1	[redacted]			
/a2/3										
66. cart	9	3	a	1	u	1	a-e	1		
67. party	16	6	a	6						
68. dark	12	7	or	2	re	1	i	1	e	1
69. bark	8	6	ra	2	o	2	ro	1	[redacted]	
70. chart	11	4	a	1	ra	1	i-e	1	ar-e	1
/ɔ1/1										
71. lawn	35	32	o	15	o-e	6	or	3	arw	1
72. wall	15	15	o	9	o-e	3	oo	1	oa	1
73. salt	10	7	o	3	la	1	i	1	o-g	1
74. fork	17	10	ro	5	a	2	e	1	o-e	1
75. born	21	12	o	6	oe	1	a	1	oa	1

AREA DRACUT
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/ɔ1/2	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
76. war	27	24	o	13	a-e	3	o-e	3	aw	1
77. yawn	33	32	o	8	or	7	o-e	5	ar	3
78. stork	17	14	o	7	a	2	ar	2	o-e	1
79. salt	5	4	o	2	i	1	ai	1		
80. cork	8	5	a	2	ore	1	oo	1	o	1

AREA WACO 4 **TOTAL NUMBER OF STUDENTS** 54 **SIXTH GRADE**

	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
			Most Frequent Misspellings							
/ae/										
*1. stature	32	1	au	1						
2. faculty	42	2	au	1	ao	1				
3. amber	4	0								
4. massive	40	0								
5. average	17	1	ar	1						
7. vanity	19	3	ai	1	i	1	e	1		
7. magnets	11	0								
8. imaginary	34	0								
/e/										
*9. whet	40	4	i	2	a	1	ey	1		
10. embrace	32	18	i	18						
11. entitle	34	25	i	25						
12. descent	44	0								
13. welt	12	4	ea	2	a	1	i	1		
14. trench	14	9	i	7	a	2				
15. festival	36	2	ea	1	a	1				
16. enclose	21	21	i	21						
*/i/										
17. riddance	52	7	e	7						
18. imprint	14	6	e	6						
19. infidel	52	8	e	8						
20. whim	37	31	e	31						
21. flinch	25	20	e	20						
22. flint	4	4	e	4						
23. slid	10	10	i-e	6	ea	2	e	2		
24. insult	7	2	e	2						

APPENDIX G

AREA WACO

	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/u/										
25. prudent	25	10	o	4	ou	2	ue	2	oo	1
26. groove	42	35	o	25	u	6	ou	3	e	1
27. juvenile	52	10	ou	4	ue	2	e	2	uv	1
28. lagoon	14	6	o	4	u	2				
29. include	11	5	u	4	o	1				
30. fluid	14	7	ue	3	u	2	ooe	1	iue	1
31. flute	4	3	o	1	oo	1	iu	1		
32. rooster	27	27	o	15	oa	7	u	4	ou	1
/a^1/										
33. swab	24	18	o	12	au	3	u	2	i	1
34. modest	21									
35. toboggan	50	7	a	4	ou	2	e	1		
36. opera	31	1	a	1						
37. soggy	19	2	au	1	u	1				
38. object	7	2	a	1	ou	1				
39. collar	9	0								
40. bother	2	2	ou	2						
/a^2/										
41. tarnish	9	1	o	1						
42. marvel	33	2	a	2						
43. plaza	15	1	i	1						
44. artichokes	42	7	a	4	or	2	ah	1		
45. cardinal	25	0								
46. armory	40	2	a	2						
47. marble	7	1	o	1						
48. sparkle	12	1	ra	1						

AREA WACO
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	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/ɔ1/										
*49. audition	37	25	a	11	o	8	al	4	ai	1
50. autopsy	48	44	ar	17	or	6	o	6	al	6
51. accordance	50	7	our	3	o	2	ar	1	ou	1
52. cornea	38	5	ar	2	a	1	oar	1	ou	1
53. auburn	47	44	al	31	ar	5	a	4	aul	1
54. morgue	47	0								
55. sauce	34	10	ou	9	a	1				
56. thaw	16	14	ough	6	all	3	au	1	o	1
/ɔ²/										
*57. scoff	28	6	oa	1	ou	1	u	1	oo	1
58. lofty	16	3	augh	1	aw	1	ou	1		
59. prong	14	2	ou	2						
60. foster	4	2	au	1	oa	1				
61. mossy	16	0								
62. broth	22	13	ou	6	a	3	ough	1	[illegible]	~~1~~
63. soft	4	4	a	2	ou	2				
64. catalog	31	3	ou	2	u	1				
/ey/										
65. plaintiff	53	48	a	48						
66. quaint	32	27	a	21	i	4	e	1	ia	1
67. cascade	15	1	ai	1						
68. baste	35	17	a	17						
69. crater	8	3	ea	2	ae	1				
70. create	6	3	a	1	e	1	aa	1		
71. crane	13	12	ai	9	a	2	ea	1		
72. angel	26	0								

	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/iy/ **73. extremist**	43	17	ea	8	i	6	er	1	u	1
74. theory	33	1	i	1						
75. magnesium	46	16	i	7	ei	5	ie	1	eu	1
76. nominee	44	35	y	15	e	10	ie	5	ey	4
77. decent	35	2	ee	1	ea	1				
78. absentee	46	33	e	15	y	8	ie	4	ea	3
79. idea	5	0								
80. secret	10	0								
/ow/ * **81. noble**	8	0								
82. slope	14	10	o	9	ou	1				
83. probe	14	11	o	9	ou	2				
84. throat	8	5	ou	2	o	2	ough	1		
85. boast	14	13	o	9	ou	2	u	1	oo	1
86. hotel	4	0								
87. odor	33	0								
88. scold	1	0								
/iu/ **89. nephew**	12	5	u	2	we	1	uw	1	un	1
90. cubic	17	1	ue	1						
91. curfew	47	36	ue	22	u	3	eu	2	ude	2
92. fumigate	39	5	eu	2	ue	1	ua	1	ew	1
93. future	13	1	ea	1						
94. mutiny	36	3	iu	1	eu	1	e	1		
95. amuse	8	2	ui	1	u	1				
96. refuse	2	2	u	1	ue	1				

	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/aw/										
*** 97. louse**	24	11	o	3	ow	2	oa	1	u	1
98. gout	15	7	ough	2	ow	1	au	1	a	1
99. joust	35	27	oi	9	oy	8	o	6	oa	1
100. devout	30	18	o	9	a	2	au	2	ow	2
101. lounge	16	6	o	5	oa	1				
102. pounce	15	5	o	4	u	1				
103. bound	4	3	o	3						
104. trout	5	4	ough	2	au	1	ow	1		
/ɔi/										
*** 105. doily**	45	33	o	15	ou	8	oy	3	ow	2
106. exploit	37	34	o	14	ou	6	oy	5	oe	5
107. turmoil	45	15	o	4	oul	2	ole	2	ol	1
108. employ	21	9	oi	3	oe	2	oue	1	oie	1
109. broiled	10	6	o	4	ou	1	o	1		
110. appoint	44	7	o	4	ou	3				
111. poison	27	14	o	11	io	1	oe	1	ol	1
112. voyage	25	15	oa	5	o	3	ou	2	or	2
/r/										
113. implore	45	0								
114. rougher	19	0								
115. assortment	34	2	o	1	rr	1				
116. gourd	47	0								
117. empire	15	0								
118. peril	51	12	rr	12						
119. roar	7	0								
120. pouring	12	0								

	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/t/										
121. stature	32	24	ch	14	g	2	th	2	tc	2
122. Magnets	11	1	n	1						
123. trench	14	0								
124. festival	35	0								
125. insult	7	0								
126. rooster	27	0								
127. tarnish	9	0								
128. autopsy	48	3	tt	2	th	1				
/f/										
129. faculty	42	3	ph	2	fh	1				
130. flinch	25	0								
131. scoff	28	27	f	16	pe	2	tt	2	v	2
132. soft	4	0								
133. plaintiff	53	50	ive	13	f	11	a	10	s	6
134. nephew	12	6	f	5	fl	1				
135. fumigate	39	0								
136. refuse	2	0								

AREA DRACUT **TOTAL NUMBER OF STUDENTS** 32 **SIXTH GRADE**

	W/E	P/E	Most Frequent Misspellings Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/ae/										
*1. stature	19	2	au	1	u	1				
2. faculty	31	2	o	2						
3. amber	10	4	al	1	e	1	i	1	o	1
4. massive	6	0								
5. average	15	1	ar	1						
7. vanity	21	3	ai	1	e	1	oi	1		
7. magnets	8	0								
8. imaginary	26	5	i	4	e	1				
/e/										
*9. whet	31	1	u	1						
10. embrace	27	14	i	14						
11. entitle	19	14	i	14						
12. descent	30	1	a	1						
13. welt	6	3	ea	1	a	1	ai	1		
14. trench	3	3	ea	1	a	1	o	1		
15. festival	22	3	ea	3						
16. enclose	15	14	i	14						
*/i/										
17. riddance	31	8	e	6	eiu	1	ea	1		
18. imprint	19	5	e	5						
19. infidel	30	0								
20. whim	27	5	e	2	a	2	ia	1		
21. flinch	12	8	e	6	o	1	ea	1		
22. flint	5	3	e	3						
23. slid	9	9	i-e	6	o	2	ee	2		
24. insult	14	1	e	1						

AREA DRACUT
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	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/u/										
25. prudent	20	15	o	12	ou	2	oo	1		
26, groove	26	24	o	21	u	3				
27. juvenile	30	10	ew	3	o	3	ui	2	ou	1
28. lagoon	14	10	0	7	u	3				
29. include	7	6	u	3	ou	2	oo	1		
30. fluid	16	11	ou	3	ow	3	o	2	oo	1
31. flute	7	5	ue	2	ui	2	ou	1		
32. rooster	19	18	o	7	oa	4	u	4	ou	3
/a^1/										
33. swab	14	7	o	6	uor	1				
34. modest	18	3	ou	2	oo	1				
35. toboggan	30	3	a	2	oa	1				
36. opera	26	5	or	3	oa	1	ora	1		
37. soggy	17	4	or	2	ou	1	i	1		
38. object	5	0								
39. collar	17	4	a	3	ou	1				
40. bother	7	5	ou	5						
/a^2/										
41. tarnish	5	2	o	1	i	1				
42. marvel	18	4	a	3	o	1				
43. plaza	14	0								
44. artichokes	26	6	a	3	o	1	er	1	are	1
45. cardinal	23	2	a	1	or	1				
46. armory	27	4	a	4						
47. marble	7	1	ou	1						
48. sparkle	14	3	a	2	o	1				

	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/iy/										
73. extremist	28	10	ea	9	a	1				
74. theory	27	6	ei	2	o	1	oi	1	i	1
75. magnesium	26	13	i	9	ei	1	ie	1	ea	1
76. nominee	30	22	y	7	e	6	ie	4	ey	2
77. decent	20	4	ea	3	a	1				
78. absentee	27	26	y	11	e	6	ie	4	ea	3
79. idea	4	3	ear	2	i	1				
80. secret	13	0								
/ow/										
* **81. noble**	9	0								
82. slope	7	7	o	6	oo	1				
83. probe	15	13	o	10	ou	2	oo	1		
84. throat	14	11	ou	5	o	3	ow	1	ough	1
85. boast	12	12	o	11	r	1				
86. hotel	3	0								
87. odor	17	1	ow	1						
88. scold	9	6	ou	4	oa	1	oi	1		
/iu/										
89. nephew	24	19	ue	7	u	4	ew	2	you	1
90. cubic	19	4	ui	3	ua	1				
91. curfew	24	20	ue	9	u	8	ue	3		
92. fumigate	27	7	ew	4	ui	1	uea	1	ue	1
93. future	12	6	eau	1	ew	1	ea	1	ue	1
94. mutiny	28	6	ou	2	eau	1	ue	1	ui	1
95. amuse	3	0								
96. refuse	3	2	ue	1	ea	1				

AREA DRACUT
Page 3

	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/ɔ1/										
*49. **audition**	28	28	o	14	or	8	ar	3	a	3
50. **autopsy**	31	28	o	13	or	6	a	4	ou	4
51. **accordance**	31	4	our	1	orr	1	o	1	ur	1
52. **cornea**	20	6	o	3	ou	1	e	1	ok	1
53. **auburn**	29	28	o	12	or	9	a	6	aw	1
54. **morgue**	28	10	o	9	oar	1				
55. **sauce**	11	6	ou	2	aw	2	or	1	a	1
56. **thaw**	19	19	or	4	ore	4	-our	2	ow	2
/ɔ2/										
*57. **scoff**	17	7	oa	3	a	2	oo	1	u	1
58. **lofty**	13	1	augh	1						
59. **prong**	8	2	a	1	i	1				
60. **foster**	8	3	a	1	or	1	oa	1		
61. **mossy**	18	0								
62. **broth**	11	7	ou	6	ough	1				
63. **soft**	1	0								
64. **catalog**	22	1	loge	1						
/ey/										
65. **plaintiff**	25	18	a	17	o	1				
66. **quaint**	22	20	a	12	i	4	ie	1	e	1
67. **cascade**	21	3	ai	2	e	1				
68. **baste**	22	8	a	7	ai	1				
69. **crater**	18	6	ea	4	ai	1	ao	1		
70. **create**	10	6	a	4	eat	1	eaigh	1		
71. **crane**	8	7	ai	5	a	1	ea	1		
72. **angel**	11	0								

AREA DRACUT
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	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/aw/										
*97. **louse**	13	8	o	7	ow	1				
98. **gout**	12	7	ow	3	o	2	iou	1	u	1
99. **joust**	16	10	o	5	oa	1	a	1	u	1
100. **devout**	16	7	o	5	ough	1	oi	1		
101. **lounge**	16	7	o	6	u	1				
102. **pounce**	16	3	o	2	u	1				
103. **bound**	2	1	o	1						
104. **trout**	6	2	ough	1	oa	1				
/ɔi/										
*105. **doily**	24	21	o	9	or	3	oy	2	oe	2
106. **exploit**	22	19	o	11	oy	4	or	2	oa	1
107. **turmoil**	24	4	o	2	e	2				
108. **employ**	17	5	oe	2	oi	1	oie	1	ori	1
109. **broiled**	16	7	ou	3	oa	1	io	1	oy	1
110. **appoint**	25	4	ou	2	io	1	o	1		
111. **poison**	18	9	o	5	ou	2	oui	1	i	1
112. **voyage**	13	8	ou	3	oi	1	oiy	1	oui	1
/r/										
113. **implore**	28	2	w	1	d	1				
114. **rougher**	21	0								
115. **assortment**	26	1	u	1						
116. **gourd**	24	0								
117. **empire**	12	0								
118. **peril**	26	8	rr	8						
119. **roar**	8	4	w	3	gh	1				
120. **pouring**	10	1	rr	1						

AREA DRACUT
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	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/t/										
121. stature	19	6	ch	3	ct	1	lt	1	g	1
122. Magnets	8	1	tt	1						
123. trench	3	0								
124. festival	22	0								
125. insult	14	1	d	1						
126. rooster	19	0								
127. tarnish	5	0								
128. autopsy	26	2	tt	2						
/f/										
129. faculty	31	3	v	1	th	1	t	1		
130. flinch	12	2	p	1	b	1				
131. scoff	18	16	f	12	rf	3	lf	1		
132. soft	1	1	lf	1						
133. plaintiff	25	23	f	13	ive	4	tew	1	fe	1
134. nephew	24	24	f	20	ff	2	v	2		
135. fumigate	27	2	fl	1	ph	1				
136. refuse	3	0								

AREA WELLINGTON 2 TOTAL NUMBER OF STUDENTS 40 SIXTH GRADE

	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
			Most Frequent Misspellings							
/ae/										
*1. stature	30	3	au	1	ar	1	u	1		
2. faculty	34	2	e	1	al	1				
3. amber	15	6	o	5	au	1				
4. massive	28	0								
5. average	19	1	ar	1						
7. vanity	18	2	ai	2						
7. magnets	9	0								
8. imaginary	33	7	ar	2	i	1	ai	1	e	1
/e/										
*9. whet	30	0								
10. embrace	28	21	i	21						
11. entitle	29	27	i	26	u	1				
12. descent	33	0								
13. welt	6	2	i	2						
14. trench	11	10	i	5	a	3	u	1	ea	1
15. festival	26	5	ea	3	ie	2				
16. enclose	18	18	i	18						
*/i/										
17. riddance	40	13	e	13						
18. imprint	10	4	e	4						
19. infidel	38	3	a	1	e	1	n	1		
20. whim	30	13	e	11	ee	1	i-e	1		
21. flinch	11	9	e	8	u	1				
22. flint	4	1	e	1						
23. slid	13	12	i-e	9	ie	2	e	1		
24. insult	21	1	e	1						

AREA WELLINGTON
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	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/u/										
25. prudent	25	13	o	7	e	2	ou	2	ea	1
26, groove	29	26	o	21	oa	1	or	1	i	1
27. juvenile	35	8	ew	2	oo	1	ui	1	e	1
28. lagoon	18	11	o	6	u	2	oa	1	ou	1
29. include	12	9	u	5	ue	1	o	1	oo	1
30. fluid	14	9	oo	3	ue	1	ou	1	ude	1
31. flute	9	8	ui	2	oo	2	u	2	ou	1
32. rooster	15	14	o	8	oa	4	u	1	ou	1
/a^1/										
33. swab	20	10	o	6	aw	1	ouw	1		
34. modest	16	2	oi	1	ooe	1				
35. toboggan	40	13	a	10	e	1	i	1	u	1
36. opera	25	4	a	4						
37. soggy	23	4	a	1	oa	1	ou	1	ow	1
38. object	3	2	a	1	au	1				
39. collar	7	3	a	2	ar	1				
40. bother	2	2	oo	2						
/a^2/										
41. tarnish	11	0								
42. marvel	15	1	a	1						
43. plaza	15	1	u	1						
44. artichokes	35	3	adr	1	ac	1	rr	1		
45. cardinal	28	0								
46. armory	32	4	a	4						
47. marble	13	2	a	2						
48. sparkle	13	2	a	2						

AREA WELLINGTON
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	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/ɔ1/										
X 49. **audition**	33	28	a	15	o	8	al	2	all	1
50. **autopsy**	40	34	o	16	a	14	all	2	ow	1
51. **accordance**	39	10	our	3	qu	2	ou	2	ar	1
52. **cornea**	30	1	ar	1						
53. **auburn**	37	35	al	15	a	10	aw	3	o	2
54. **morgue**	40	2	ou	1	oo	1				
55. **sauce**	23	11	a	4	ou	2	u	1	aw	1
56. **thaw**	18	18	ough	7	ow	3	al	1	all	1
/ɔ²/										
X 57. **scoff**	31	20	a	8	ou	5	aw	4	u	2
58. **lofty**	23	12	aw	4	a	3	00	2	ao	1
59. **prong**	9	4	oa	1	or	1	a	1	ou	1
60. **foster**	3	2	or	1	oo	1				
61. **mossy**	13	3	a	2	ou	1				
62. **broth**	13	9	oo	2	ou	2	oa	1	au	1
63. **soft**	1	0								
64. **catalog**	22	5	oge	3	a	1	iog	1		
/ey/										
65. **plaintiff**	36	29	a	25	e	3	i	1		
66. **quaint**	28	19	a	17	i	1	ui	1		
67. **cascade**	17	3	cde	1	i	1	e	1		
68. **baste**	29	19	a	17	ai	2				
69. **crater**	17	8	ea	3	e	3	ae	1	ai	1
70. **create**	13	7	a	5	eau	2				
71. **crane**	13	9	ai	7	a	2				
72. **angel**	15	0								

	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/iy/										
73. extremist	35	19	ea	9	i	6	ee	4		
74. theory	32	5	ie	3	i	2				
75. magnesium	35	14	i	5	ie	3	ea	2	ee	1
76. nominee	33	26	e	8	y	8	ie	4	ey	3
77. decent	21	2	ee	1	i	1				
78. absentee	37	32	y	13	e	5	ie	4	ea	3
79. idea	10	9	i	5	a	2	e	1	era	1
80. secret	16	3	ea	1	i	1	ee	1		
/ow/										
** **81. noble**	14	1	ow	1						
82. slope	14	12	o	7	oo	4	ou	1		
83. probe	21	19	o	13	ou	4	ow	1	oeb	1
84. throat	12	9	ou	4	o	3	or	1	u	1
85. boast	16	14	o	10	oo	3	a	1		
86. hotel	7	0								
87. odor	31	1	or	1						
88. scold	11	6	ou	6						
/iu/										
89. nephew	27	19	ue	10	ou	2	er	1	eu	1
90. cubic	31	2	ui	1	ue	1				
91. curfew	29	25	ue	14	u	2	ui	1	ul	1
92. fumigate	37	7	ue	2	ew	2	ou	1	e	1
93. future	17	9	ur	4	ou	2	ew	1	e	1
94. mutiny	35	12	e	4	ui	1	uo	1	oo	1
95. amuse	12	3	ue	1	ui	1	ou	1		
96. refuse	4	0								

AREA WELLINGTON
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	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/aw/ *97. **louse**	11	8	oo	3	o	3	oa	1	oe	1
98. **gout**	16	13	ow	3	o	3	oe	2	ua	2
99. **joust**	21	15	o	6	oi	4	u	2	ow	1
100. **devout**	24	15	o	10	e	2	oo	1	or	1
101. **lounge**	19	6	o	5	u	1				
102. **pounce**	20	11	o	9	u	1	a	1		
103. **bound**	6	6	o	4	oa	2				
104. **trout**	6	3	o	2	oa	1				
/ɔi/ *105. **doily**	33	27	o	15	oy	4	ou	2	or	2
106. **exploit**	25	20	o	12	oy	2	ou	1	u	1
107. **turmoil**	33	6	a	2	ia	1	ovi	1	io	1
108. **employ**	25	11	or	2	oe	2	i	1	ow	1
109. **broiled**	16	7	oo	2	ou	2	ow	1	oy	1
110. **appoint**	15	3	io	2	oy	1				
111. **poison**	27	11	o	6	ou	2	io	2	oa	1
112. **voyage**	24	22	ou	6	oa	6	oi	4	og	2
/r/ 113. **implore**	28	4	e	2	t	1	w	1		
114. **rougher**	22	0								
115. **assortment**	8	0								
116. **gourd**	34	0								
117. **empire**	21	0								
118. **peril**	38	13	rr	13						
119. **roar**	9	2	w	1	y	1				
120. **pouring**	10	2	oo	1	o	1				

AREA WELLINGTON
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	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/t/										
121. stature	30	20	ch	15	th	2	tch	1	g	1
122. Magnets	9	0								
123. trench	11	1	ter (no "t" at all)	1						
124. festival	26	2	sav	1	siv	1				
125. insult	21	2	1	1	te	1				
126. rooster	15	0								
127. tarnish	11	0								
128. autopsy	40	2	tt	1	p	1				
/f/										
129. faculty	34	2	th	1	fl	1				
130. flinch	11	1	v	1						
131. scoff	31	27	f	19	lf	4	fe	2	gh	2
132. soft	1	0								
133. plaintiff	36	34	f	23	ive	9	fe	2		
134. nephew	27	23	f	18	ff	3	fr	1	pf	1
135. fumigate	37	1	fh	1						
136. refuse	4	0								

AREA LAGRANGE 1 TOTAL NUMBER OF STUDENTS 31 SIXTH GRADE

	W/E	P/E	Most Frequent Misspellings							
			Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/ae/										
*1. stature	26	1	au	1						
2. faculty	30	1	au	1						
3. amber	7	1	e	1						
4. massive	23	1	ai	1						
5. average	10	0								
7. vanity	17	2	ai	1	ia	1				
7. magnets	3	0								
8. imaginary	25	1	i	1						
/e/										
*9. whet	25	4	ea	3	e-e	1				
10. embrace	21	17	i	17						
11. entitle	24	21	i	21						
12. descent	29	2	i	2						
13. welt	6	4	i	2	ea	2				
14. trench	10	9	i	5	a	1	ee	1	ea	1
15. festival	19	1	ea	1						
16. enclose	20	20	i	20						
*/i/										
17. riddance	29	10	e	10						
18. imprint	15	9	e	9						
19. infidel	30	5	e	5						
20. whim	26	17	e	14	ei	1	ee	1	iea	1
21. flinch	22	20	e	18	ee	1	a	1		
22. flint	6	4	e	3	ee	1				
23. slid	9	9	i-e	6	e	2	ee	1		
24. insult	7	2	e	2						

	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/u/										
25. prudent	20	9	o	4	oo	1	ue	1	eu	1
26. groove	25	25	o	23	u	1	u-e	1		
27. juvenile	29	2	ui	1	eo	1				
28. lagoon	18	12	o	5	u	3	oo-e	1	o-e	1
29. include	10	7	u	3	ou	2	ue	1	i	1
30. fluid	14	7	iu	2	ou	2	w	1	ul	1
31. flute	5	3	u	2	eu	1				
32. rooster	18	17	o	10	oa	4	u	2	ou	1
/a^1/										
33. swab	16	9	o	5	a-e	2	ou	1	aw	1
34. modest	22	0								
35. toboggan	28	9	a	6	ar	2	i	1		
36. opera	24	9	a	3	au	3	ar	1	aw	1
37. soggy	16	3	ou	1	oa	1	oo	1		
38. object	1	1	ou	1						
39. collar	13	1	a	1						
40. bother	4	2	ou	1	a	1				
/a^2/										
41. tarnish	10	2	ou	1	or	1				
42. marvel	16	2	a	2						
43. plaza	8	0								
44. artichokes	27	2	a	2						
45. cardinal	18	0								
46. armory	22	6	a	6						
47. marble	7	0								
48. sparkle	14	0								

	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/ɔ1/										
✱49. audition	23	16	or	5	o	4	al	2	a	2
50. autopsy	28	25	or	6	a	6	al	5	ou	2
51. accordance	30	3	ar	1	r	1	oui	1		
52. cornea	17	1	o	1						
53. auburn	19	16	al	6	ar	3	a	2	or	2
54. morgue	31	1	e	1						
55. sauce	17	11	ou	5	a	2	ay	1	ol	1
56. thaw	16	15	ow	4	ough	2	all	2	o	2
/ɔ²/										
✱57. scoff	24	10	a	5	o-e	2	or	1	oo	1
58. lofty	14	7	a	2	oa	2	au	1	oy	1
59. prong	17	4	oo	1	u	1	a	1	ou	1
60. foster	9	6	al	2	ou	2	au	1	a	1
61. mossy	15	3	ou	3						
62. broth	20	13	a	9	ou	3	o-e	1		
63. soft	2	1	al	1						
64. catalog	20	2	a	1	ou	1				
/ey/										
65. plaintiff	29	26	a	23	ea	1	ay	1	i	1
66. quaint	26	24	a	10	i	7	e	3	ee	3
67. cascade	18	2	e	2						
68. baste	24	12	a	11	al	1				
69. crater	18	3	ea	1	au	1	ai	1		
70. create	9	4	a	4						
71. crane	10	10	ai	8	e	1	ea	1		
72. angel	7	0								

AREA LaGRANGE
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	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/iy/										
73. extremist	27	12	i	8	ea	4				
74. theory	25	3	e	1	i	1	o	1		
75. magnesium	28	16	i	10	ei	4	ea	2		
76. nominee	30	23	e	9	y	7	ie	5	ey	2
77. decent	25	2	ea	1	i	1				
78. absentee	26	19	e	8	y	4	'i'	3	ie	2
79. idea	3	0								
80. secret	15	2	i	1	ea	1				
/ow/										
* 81. noble	14	0								
82. slope	15	12	o	7	oo	4	ow	1		
83. probe	12	9	o	7	ou	1	oe	1		
84. throat	7	3	o	2	a	1				
85. boast	21	19	o	13	a	2	ou	2	ao	1
86. hotel	2	0								
87. odor	22	3	or	2	oa	1				
88. scold	2	1	ou	1						
/iu/										
89. nephew	23	14	ue	9	u	2	1	1	er	1
90. cubic	26	15	ue	13	ui	2				
91. curfew	25	24	ue	13	u	4	eu	3	we	1
92. fumigate	28	6	ue	2	e	2	ui	1	o	1
93. future	11	5	ue	1	ou	1	i	1	ur	1
94. mutiny	27	5	ue	1	i	1	ew	1	ui	1
95. amuse	5	2	u	1	ui	1				
96. refuse	4	1	i	1						

AREA LaGRANGE
Page 5

		W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/aw/											
*97.	louse	17	13	o	7	oo	2	au	2	oa	1
98.	gout	21	19	al	5	ua	3	ol	2	o	2
99.	joust	19	17	o	7	a	4	or	1	ua	1
100.	devout	21	14	o	4	e	2	i	1	al	1
101.	lounge	16	7	o	4	a	1	oa	1	aw	1
102.	pounce	8	5	o	4	a	1				
103.	bound	2	2	o	2						
104.	trout	2	1	ol	1						
/ɔi/											
*105.	doily	27	27	o	12	or	9	oo	3	oe	1
106.	exploit	25	24	o	9	or	4	ou	3	oe	2
107.	turmoil	26	21	o	11	a	2	ai	1	oy	1
108.	employ	17	7	oi	2	oye	1	owy	1	ou	1
109.	broiled	19	11	ou	4	o	4	oo	1	ow	1
110.	appoint	24	3	ou	2	io	1				
111.	poison	20	12	o	11	ou	1				
112.	voyage	5	3	o	2	oa	1				
/r/											
113.	implore	19	0								
114.	rougher	13	0								
115.	assortment	27	0								
116.	gourd	30	1	n	1						
117.	empire	21	0								
118.	peril	30	19	rr	19						
119.	roar	5	2	w	1	ght	1				
120.	pouring	10	0								

AREA LaGRANGE
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	W/E	P/E	Sp.	No.	Sp.	No.	Sp.	No.	Sp.	No.
/t/ 121. stature	26	9	ch	6	c	1	g	1	ct	1
122. Magnets	3									
123. trench	10	0								
124. festival	19	1	v	1						
125. insult	7	1	te	1						
126. rooster	18	0								
127. tarnish	10	0								
128. autopsy	28	0								
/f/ 129. faculty	30	0								
130. flinch	22	1	bl	1						
131. scoff	24	20	f	12	ft	3	ph	2	p	1
132. soft	2	1	l	1						
133. plaintiff	29	26	f	15	th	5	ive	3	fe	2
134. nephew	23	18	f	15	ff	1	v	1	eev	1
135. fumigate	28	0								
136. refuse	4	1	v	1						